

# COMPUTERWORLD

## N.Y. bank deal likely to consolidate IS ranks

Cuts seen in Chemical/Manny Hanny merger

BY JOHANNA AMBROSIO  
CW STAFF

NEW YORK — Short-term pain but long-term gain. That is how observers characterized the probable information systems ramifications of the proposed merger announced last week between New York banking behemoths Chemical Banking Corp. and Manufacturers Hanover Corp.

The IS layoffs and regrouping that are expected in merger situations will probably occur during the next one to two years, observers said. But a strong IS function in the combined institution five years from now is a possibility.

"There are likely to be significant short-term savings by aggressively combining the data processing and operations of the two," said Brendan O'Sullivan, a partner at Ernst & Young's banking information technology practice in New York. "Over the longer term, they will be in a

stronger position for improved customer service and the faster release of new products."

The merger would create the second largest bank in the U.S. behind Citicorp; the new institution would bear Chemical's name. The deal, expected to be finalized around year's end, has to be approved by regulatory agencies and the banks' shareholders. Chemical is the larger

*Continued on page 8*

### Executive costs

How would you rate the pricing of installation and maintenance of your executive information system?

See Buyers' Scorecard page 72



Product	Score*
Response base: 50 users per product	
Pilot Executive Software's Command Center	48
Comshare, Inc.'s Commander	41

\*Highest possible rating is 74. Rating based on a 1-10 scale where 1 is very poor and 10 is very good. The average ratings are multiplied by a weighting factor (7.4) based on how important criteria are to users.

CW Chart: Janell Genovese

## 'Telework' hubs sprout in suburban America

BY MITCH BETTS  
CW STAFF

For supervisors concerned that employees working at home will spend their time raiding the fridge, there is a new form of telecommuting around the corner: telework centers.

Also known as satellite offices or neighborhood work centers, telework centers are computer-equipped office facilities located near



Janell Genovese

residential communities. Employees who used to spend two hours commuting to headquarters downtown can instead drive just a few miles to a satellite office near home.

In Hawaii, for example, 17 employees from a hodgepodge of businesses and state agencies show up for work at the Hawaii

Telework Center in the suburb of Mililani instead of navigating the nerve-racking Highway 1 freeway to offices in downtown Honolulu. The center is a pilot project of the state's Department of Transportation.

For employers, the biggest benefit is that by locating jobs close to homes, companies are in a much better position to recruit and retain good employees who want to live in certain neighborhoods, according to managers of telework centers.

When Pacific Bell moved its headquarters a few years ago, for example, employees who did not want to relocate were allowed to use the vacant office space as a telework center, said

con Valley area.

Analysts said the results are further proof that firms grown fat on proprietary technologies during economic boom times are finding that it takes time and pain to turn into slim and agile open systems players during a worldwide recession.

Even AT&T, one of the few major computer firms reporting upbeat financial results last week, dampened future expectations with the news that it may take a whopping \$4 billion hit against profits later this year as it absorbs NCR Corp.

*Continued on page 8*

## IBM saddled with sales slump

BY NELL MARGOLIS  
CW STAFF

Slowing computer sales cut sharply into IBM's revenue for the second quarter, leaving the company with a slim profit to announce last week and offering scant evidence of better days ahead.

Meanwhile, Apple Computer, Inc., in the midst of restructuring as it deals with a shift toward lower-margin sales, wiped out its profits with a reserve to cover ongoing layoffs and to pay for moving some of its operations out of California's high-rent Sili-

### Receding sales

IBM eked out a small profit in the second quarter of 1991 as revenue plummeted from the same time last year

IBM	(in millions)	Revenue	Profits
Q2---	\$14,732	\$114	
Q1---	\$13,545	(\$1,731)*	
1990			
Q2---	\$16,495	\$1,410	
Q1---	\$14,185	\$1,037	

\*Without an accounting charge for postretirement benefits, profits would have been \$332 million

CW Chart: Janell Genovese

## 3090 yields to OS/2 network

BY JOANIE M. WEXLER  
CW STAFF

AUSTIN, Texas — Unfazed by the recent controversy surrounding the future of IBM's OS/2, the American Cancer Society is marching forward with a five-year, \$10 million project to move its databases and financial applications off of a central mainframe and onto 100 OS/2 Extended Edition-based local-area networks.

The society's somewhat unorthodox downsizing plan is to connect approximately 800 personal computers to OS/2 servers on Token Ring LANs without a network operating system in many sites.

In smaller locations, the non-profit organization is leveraging the Communications Manager

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**T**he partnering business is reaching the point of promiscuity."

BRANDY BRANDON  
DUFF & PHELPS

*On PC software merger activity. See story page 1.*

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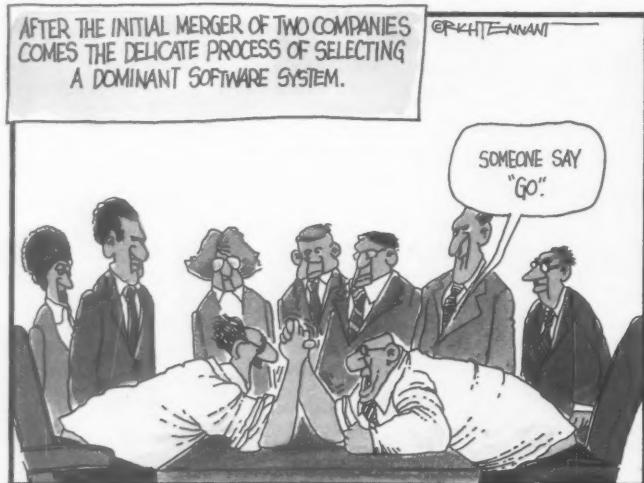
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## The 5th Wave

AFTER THE INITIAL MERGER OF TWO COMPANIES COMES THE DELICATE PROCESS OF SELECTING A DOMINANT SOFTWARE SYSTEM.



# EXECUTIVE BRIEFING

■ Telework centers are emerging as an alternative for companies with employees who wish to work at home. These satellite offices, sprouting up in residential areas, seem to meet the needs of both managers and staff members. The facilities give workers a close-to-home commute and bosses the comfort of knowing employees are surrounded by an office environment rather than the distractions of home. **Page 1.**

■ Executive information systems are not just for mainframes anymore. According to a study by Ottawa-based Branham Consulting Group, 25 of 43 sites surveyed were implementing EISs on a PC LAN. The benefits can include lower costs, less dependence on IS for applications development and faster response times. Over the long haul, however, systems growth — in terms of both user population and user need to access an increasing number of databases — can pose some serious hazards. **Page 67.**

■ IBM's OS/2 scores a victory in an unusual application. The American Cancer Society plans to move a mainframe application to Token Ring LANs, with OS/2 Extended Edition driving the servers. Eliminating the network operating system is expected to save both costs and administrative headaches. **Page 1.**

■ International Paper embraces centralized computing as IS' way to handle the firm's acquisitions of 25 companies in the past five years. Shunning the downsizing trend, the IS team says it sees mainframes and fewer data centers as the better strategy. **Page 59.**

■ Project management is more than technical know-how and scheduling skills. It's about managing people, which takes a combination of motivation, teamwork and communication. **Page 77.**

■ Amtrak finds an alternative to a chargeback system to keep track of the cost of mainframe services. Called memo billing, the automated system produces reports on costs of user-requested services. **Page 59.**

■ Looking at user satisfaction, program managers call large federal systems integration projects a success, even though Congress and the federal government blast them for being too costly and behind schedule. **Page 81.**

■ On site this week: Jet Propulsion Laboratories catches the downsizing bug and plans to include a network of workstations in its process of analyzing space data, a system long managed by mainframes. **Page 29.** The IS group at the Democratic Senatorial Campaign Committee gives its nontechnical users access to campaign data with a natural language tool. **Page 32.**

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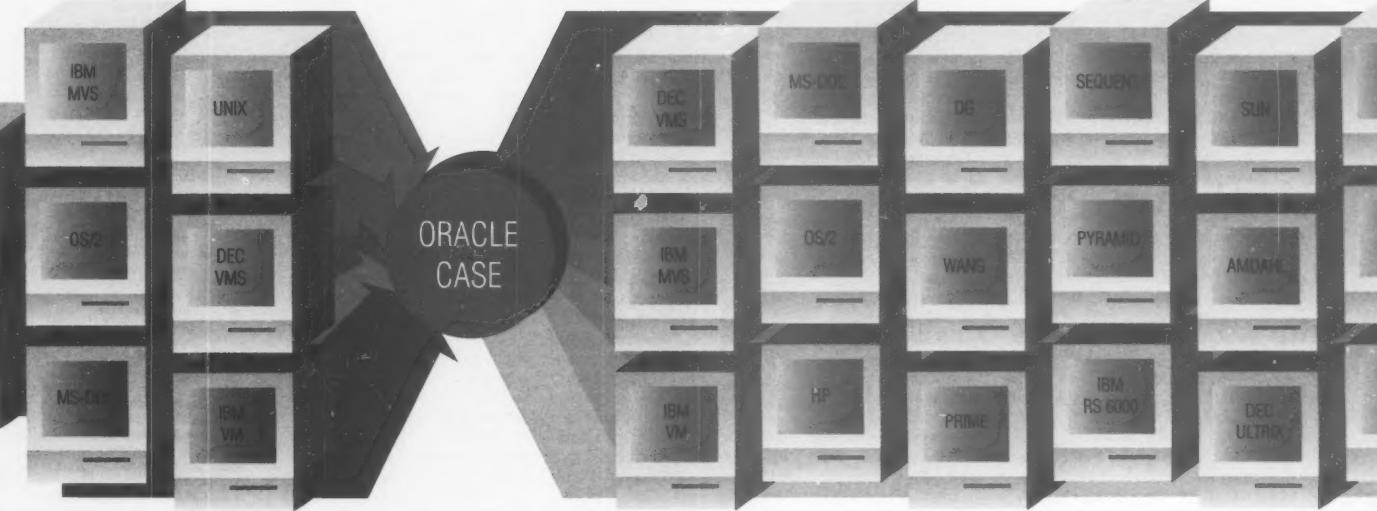
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# DG links Aviion to wide array of platforms

BY SALLY CUSACK  
CW STAFF

WESTBORO, Mass. — Unleashing no fewer than 30 software and communications products last week, Data General Corp. is offering interoperability to its Aviion customers across virtually any industry platform.

Aviion customers can use these products, available now, to communicate with Apple Computer, Inc., Digital Equipment Corp. and IBM systems across a variety of environments.

Leading off the announcements was a focus on the Aviion Office Information Systems, a suite of packages based on office automation and Unix-based software from Uniplex in Dallas.

This OEM agreement, coupled with DG enhancements, will allow users to integrate the Unix-based Aviion workstations and servers with several environments, including MS-DOS, X Window System, the Open Software Foundation's OSF/Motif and Novell, Inc.'s Netware local-area networks.

Trell Armstrong, a deputy at the Monroe County Sheriff's Department in Key West, Fla., said his department is replacing a DG MV 10000 running CEO, a proprietary office automation package, with the Uniplex version of the software on a newly purchased Aviion 5200 dual processor. According to Armstrong, the new Office Information Systems products "behave much as CEO does as far as electronic mail and word processing. The spreadsheet facilities seem better than CEO, and now we have the capability to build databases within the package. My users will go crazy for that."

DG rolled out several document-conversion utilities and dictionary products to comple-

ment its desktop strategy, as well as software that allows the use of Lotus Development Corp.'s 1-2-3 and Wordperfect Corp.'s Wordperfect packages within the Unix environment.

Other products included the following:

- Decnet Interface for Aviion Systems, which allows Aviion customers to mail messages, transfer files and access DEC VAX-based applications.
- Systems Network Architecture Token Ring for Aviion Systems, for connection over Token Ring LANs to an IBM Application System/400 or an IBM 9370.
- X.400 for Aviion Systems and

## RISC pays off

*Sales of Data General Corp.'s RISC-based systems are doubling, with most of the action in multiuser systems*

Value of shipments  
(in millions)

	1990	1991
Desktop	\$26	\$43
Multiuser	\$151	\$339

Source: Computer Intelligence/Infocorp

Transmission Control Protocol/Internet Protocol for Aviion Systems.

Support for the Simple Net-

work Management Protocol standard has also been added.

Dennis Doyle, vice president of the North American Data General User Group, viewed the announcements as a positive step toward expansion and interconnection.

"It is a way of blending into an office situation whenever and wherever it is needed," Doyle said, adding that the products will particularly benefit DG resellers and sophisticated end users.

## DeCastro sounds proprietary death knell

BY HELEN PIKE  
SPECIAL TO CW

MORRISTOWN, N.J. — Edson DeCastro, one of the driving forces in the boom-and-bust minicomputer industry, predicted last week that proprietary architecture mainframes and minicomputers will be obsolete by the end of the decade.

"I'll be very surprised if there are any 390, VAXes or MV systems left by the end of the decade," DeCastro predicted, referring to the flagship proprietary systems offered by IBM, DEC and the company he founded, Westboro, Mass.-based Data General Corp.

The more flexible client/server models available under the Unix operating system will

become the open computing platforms of choice for midrange and high-end information processing before the decade is over, DeCastro said in a speech here to the Venture Association of New Jersey.

The software migration to client/server computing with Unix will be piecemeal, according to DeCastro, but it will gradually reduce mainframes to mere data repositories and will eventually render them obsolete.

"Someone will figure out that they're too expensive to use just to keep data, and then they'll replace them with database servers," said DeCastro, who retains an honorary title as senior chairman of DG.

The onetime DEC engineer, who left that company 23 years



**DeCastro:** Proprietary systems a vanishing breed

ago to found DG before reportedly being ousted as chairman earlier this year, predicted that even IBM will find itself relying on reduced instruction set computing (RISC) systems to replace flagship proprietary systems.

"I think IBM is concerned they will never be able again to enforce a proprietary operating system," he said.

DG has already embarked on an aggressive RISC system strategy that, while not eliminating the MV series, has clearly overshadowed the proprietary systems (see story above).

In response to a question about DG's early stumble with personal computer offerings, DeCastro said that the company did not understand the channels of distribution and that "we were too focused on where the return on investment was highest — the MV series."

*Pike is a New Jersey-based free-lance writer.*

## Applications builder giveaway announced

BY J. A. SAVAGE  
CW STAFF

Betting that users and software developers would rather build custom applications with modules than from scratch, Silicon Graphics, Inc. is scheduled to announce today that it will give away object-oriented applications builders with all of its hardware.

Early users of the product, called Iris Explorer, said it cut the time of building a new application and led to greater efficiency by increasing experimentation in developing applications.

Brad deGraf, president of deGraf/Associates in Hollywood, is building an interactive world atlas to be displayed at the United Nations. Using Explorer, he

takes satellite data on surface elevation and color, for instance, and processes it to extrapolate the brightness of the earth's surface. "Explorer provides a way to put it together almost tactfully," deGraf said. "It allows experimentation. In one day, I can do 50 to 60 experiments. Otherwise, I couldn't do that."

### Saves 50%

Dynamic Graphics, Inc. in Alameda, Calif., a third-party software vendor for oil and gas exploration, creates custom programs with the new software in about half the time it takes without it, according to Glenn C. Hansen, marketing, third-party relationships, at the company.

However, not everyone is happy with the product. A third-

party vendor who asked not to be named said it will create hardship among software vendors vying for the same niche, as Silicon Graphics is giving away the product and other vendors have to charge for theirs.

On the other hand, said Mike Wilson, scientific marketing manager at Wavefront Technologies, Inc. in Santa Barbara, Calif., it will be competition, but it is not geared for end users.

While Silicon Graphics' part of Explorer will be bundled with its machines beginning in late 1991, other software companies and individuals are writing modules to be included in the package, some of which may cost consumers, according to Paul Koonz, director of graphics systems marketing at the company.

## CORRECTIONS

A chart accompanying the June 17 article, "Imaging saves money in huge bankruptcy case," mistakenly indicated that the images are distributed on compact disc/read-only memory. The images are distributed on write-once read-many optical discs.

\*\*\*\*\*

A July 15 article incorrectly stated a year-end 1991 target date for delivery of a graphical front end for the Knowledgeware, Inc. Application Development Workbench/RAD. Kevin Jennings, an information services analyst at Washington Water Power Co. and a user of the Knowledgeware product, had said he was expecting that component in late 1992. Jennings also said his company is working toward a cooperative processing, not a client/server architecture.

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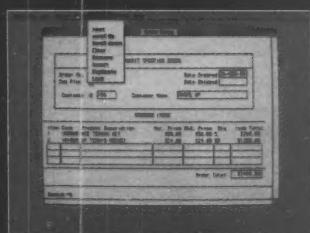
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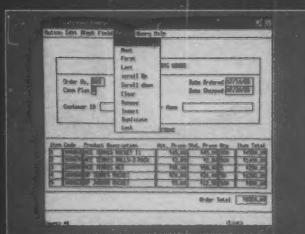
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## NEWS SHORTS

### U.S. information policy urged

Delegates to the 1991 White House Conference on Library and Information Services approved 94 of 132 proposals to President Bush and Congress on issues of national information policy and access. Among the recommendations were the following: Congress should update copyright law to account for new technologies to give users greater access to information; the government should promote the linking of all homes and businesses by fiber-optic networks; and Congress should enact legislation to foster the development of the National Research and Education Network available to all libraries.

### Sundevil hacker sentenced

Baron Majette, the first person to be charged in the Operation Sundevil investigation, was sentenced last week to 120 days in a "shock incarceration" center and five years probation and was ordered to pay restitution of nearly \$20,000. Majette, who authorities said used the handle of Doc Savage, was charged in March with telephone and credit-card fraud, among other crimes. Majette pleaded guilty to a reduced charge of a single felony in May.

### Stockholder sues Ashton-Tate

Disgruntled Ashton-Tate Corp. stockholder Edward Michael has filed a class-action suit against the company, claiming it settled for too little compensation in its recently announced plans to merge with Borland International, Inc. Under terms of the tentative agreement, Ashton-Tate stockholders will receive a fraction of a share of Borland common stock valued at \$17.50 a share. A spokesman for Borland said the allegations, which were filed in Delaware Chancery Court, are without merit, and the Scotts Valley, Calif., company will fight them.

### I486-based PC hits \$2,500 mark

San Francisco-based Lightning Computers, Inc. put a \$2,495 price tag on its new 33-MHz Intel Corp. I486-based personal computer. Lightning's new PC was designed to run at 50 MHz, and Lightning will offer customers a \$950 upgrade to the 50-MHz chip when it becomes generally available. The basic system includes 1MB of random-access memory, a 100M-byte hard drive and a 1,024- by 768-pixel resolution IBM Video Graphics Array-compatible interlaced monitor.

### RS/6000 enhancements on tap

IBM is expected to unwrap some high-end additions to its RISC System/6000 line on Wednesday. No new models are expected, although a low-end offering is slated for release later this year. According to IBM, the company will announce two-dimensional and three-dimensional graphic offerings and a new high-end scientific visualization system. A source said the latter will be targeted against Silicon Graphics, Inc. and Stardent Computer, Inc., adding that he expects IBM will talk about new technologies such as imaging assist processors and high-speed channels, which enable users to build high-end graphics.

### Aerospace firm outsources

Defense and aerospace contractor LaBarge, Inc. last week outsourced its information systems function to St. Louis-based McDonnell Douglas Systems Integration Co. The five-year contract is valued at \$2.1 million. LaBarge's move to outsourcing was spurred by its purchase of a complex contracting software system.

### X.500 white pages to get trial

A "white pages"-type directory for electronic mail users is set to begin trials early next year. The goal is to provide a secure listing of commercial E-mail users with name-search capabilities and other features. Eleven private companies, including AT&T, BT North America, Inc., General Electric Information Services, IBM, MCI Communications Corp. and the U.S. Postal Service will test an X.500 messaging system.

*More news shorts on page 100*

## Unisys rides off with Avis deal

*Rental car firm picks Unisys for workstation contract worth up to \$12M*

BY ELLIS BOOKER  
CW STAFF

GARDEN CITY, N.J. — After nearly a year of test-driving the wares of three workstation vendors, car rental giant Avis, Inc. awarded Unisys Corp. a contract for 100 systems earlier this month.

If those 100 installations work as expected, Avis said, it will tap Blue Bell, Pa.-based Unisys to supply workstation replacements for the 2,200 dumb terminals now in its domestic retail locations. That two-year deployment could be worth \$10 million to \$12 million.

The color-screen workstations will be the most visible part of Wizard IV, the latest phase of Avis' worldwide reservations network. Wizard IV replaces Wizard III, a 7-year-old network primarily based on IBM 3270

monochrome terminals linked to Avis' central mainframe over a private wide-area network.

According to Carl Valentino, vice president of computer equipment and acquisition at Avis, the prime benefit of the intelligent workstations is that they will be able to function even if cut off from the IBM 3090 600E here at Avis' world headquarters.

Steve R. Adams, vice president of data processing, said a reliability review is under way at the data center.

"We're looking at overall reliability," Adams said, noting that while the host mainframe, which runs IMS under MVS/XA, has had 100% availability for two of the past three months, "when some of the databases fail, it can cause trouble."

Unisys won the Avis bid with its Intel Corp.-based CTOS workstations. CTOS, an integrated systems and message-based network operating system, was created by Convergent Technologies, Inc., which Unisys acquired in 1988.

Avis picked Unisys, AT&T and IBM from a field of 50 vendors to build Wizard IV workstation prototypes, which it began testing earlier this year. The first 100 Unisys systems will be placed on major Avis airport counters in the Northeast this summer.

Although the current contract deals with only the U.S. sites, it may be expanded to include Avis' international locations as well. In total, Avis has some 14,500 terminals in 26 countries.

**AVIS**

## 3090

FROM PAGE 1

and Database Manager functions embedded in OS/2 Extended rather than face the expense and network administration headaches of running LAN software, said Ken Elder, vice president and chief information officer.

The group currently runs Novell, Inc. Netware on the 40 LANs installed to date because one of its accounting packages originally required a network operating system. At the time, Netware was deemed superior to IBM's LAN Server, said Kyle Cooper, senior technical analyst.

When "the accounting package vendor ports to the Database Manager portion of OS/2, we'll have the option of eliminating Novell," said Jerald S. Noble, director of telecommunications and PC support.

"We don't require Novell connectivity in the wide area," Cooper said, "but we do require OS/2-to-OS/2 connectivity among our databases. For that, we use the wide-area software connections in OS/2."

Noble added, "To connect two OS/2 LANs together this way" without bridges or routers "costs \$1,300 to \$1,700 at each end. Netware-to-Netware connections cost more than \$12,000 at each end."

What users primarily give up

by not running a network operating system is transparent access to resources on other networked devices, stated Tom Nolle, president of consulting firm CIMI Corp. in Voorhees, N.J.

"This translates into standard third-party software not running on the network," Nolle said.

Currently an OS/2 Version 1.3 shop and beta-test user of the 32-bit OS/2 2.0, it is slated to ship from IBM by year's end. The society's IS executives said they see OS/2 as the desktop operating system of the future.

"In five years, very few office systems will be without OS/2," Elder predicted. He described

OS/2's multitasking rival, Unix, as "the most unfriendly operating system" he has worked with. He also pointed out that "there's still no database manager in Unix."

According to Cooper, "The true benefit of OS/2 is its communications capabilities. When you buy OS/2 [Extended], you get a relational database server and a host of communications gateway services for free."

Steven F. Kuekes, vice president of product development at Tangram Systems Corp., a manufacturer of PC-to-mainframe links, said the interest in OS/2 is much greater today than it was a mere two months ago because such OS/2 obstacles as lack of applications and high price are being addressed.

"With [OS/2] 2.0, users will be able to run [the multitude of] DOS/Windows applications. Also, IBM is saying that users can get OS/2 free if they buy a Personal System/2 or for \$99 if they upgrade from DOS. Originally, OS/2 Extended was \$895," Kuekes said.



**American Cancer Society's Elder (left) and Naginey plan OS/2 LANs sans network operating system**

# Dbase upgrades pledged

Borland's Kahn seeks to calm users about merger impact

BY JAMES DALY  
CW STAFF

SCOTTS VALLEY, Calif. — Borland International, Inc. last week tried to calm jittery Ashton-Tate Corp. Dbase users, who are nervous about the fate of the deeply entrenched database following Borland's \$439 million buyout of its former archrival.

Soon after Borland unveiled plans for swallowing up Torrance, Calif.-based Ashton-Tate, major questions began to arise about the future of Dbase, which is not compatible with Borland's Paradox. Several analysts and an Ashton-Tate insider said they expect the plug to ultimately be pulled on Dbase.

Chairman Philippe Kahn, however, said Borland will continue to upgrade Dbase, at least until a Windows version is released later this year.

Borland will also continue to sell and support Dbase IV across multiple operating systems, including Apple Computer, Inc.'s Macintosh, Digital Equipment Corp.'s VAX and Sun Microsystems, Inc. platforms, as well as five desktop Unix systems.

The company said it also plans to support and enhance Ashton-Tate's Interbase server across many platforms, including Unix and VMS. "We will protect customer investments," Kahn said.

After that, the situation becomes less certain. Borland plans eventually to take both Paradox and Dbase customers to a new generation of database.

That migration path will be paved by the Object Dbase Compiler, which will act as "the glue between the two databases," said Rob Dickerson, general manager of

Borland's database business unit. The new architecture will include a programming language and other software tools to create applications that can share data from Paradox, Dbase and other programs. A ship date was not announced.

Jack Detrick, director of data processing at Centinela Hospital in Los Angeles, said that completely scrapping Dbase would be a mistake. "I've got a lot of Dbase applications running here at the hospital, and I'm not about to stand up in front of the departments and say we're

going to convert them all to Paradox," he said.

Instead, he would be amenable to a merged product using the Dbase programming language and the Paradox interface.

Kahn said the key to the merged product will be Borland's background in object-oriented technology, which means that users will be able to create new programs by reusing chunks of existing ones.

## The finishing touches

Completion of the union is subject to, among other things, the approval of the government and each company's shareholders. The transaction is expected to be completed later this year.

In related news, Borland reported rev-

enue of \$77 million for the first quarter ended June, an 88% increase over the \$41 million reported for the corresponding period last year and a 9% gain over the \$71.8 million reported for its fourth quarter. Net income rose to \$9 million, or 56 cents per share, a 94% gain over the \$4.6 million reported for the corresponding quarter of 1990.

Sales of Dbase IV Version 1.1 helped Ashton-Tate chalk up quarterly net revenue of \$60.1 million, or 11 cents per share, a 25% increase over last year's \$48.1 million figure for the similar quarter. Net income for the quarter ended June 30 was \$2.8 million, or 11 cents per share. The company lost \$12.6 million, or 47 cents per share, during the corresponding period in 1990.

## Compaq to enter Japan

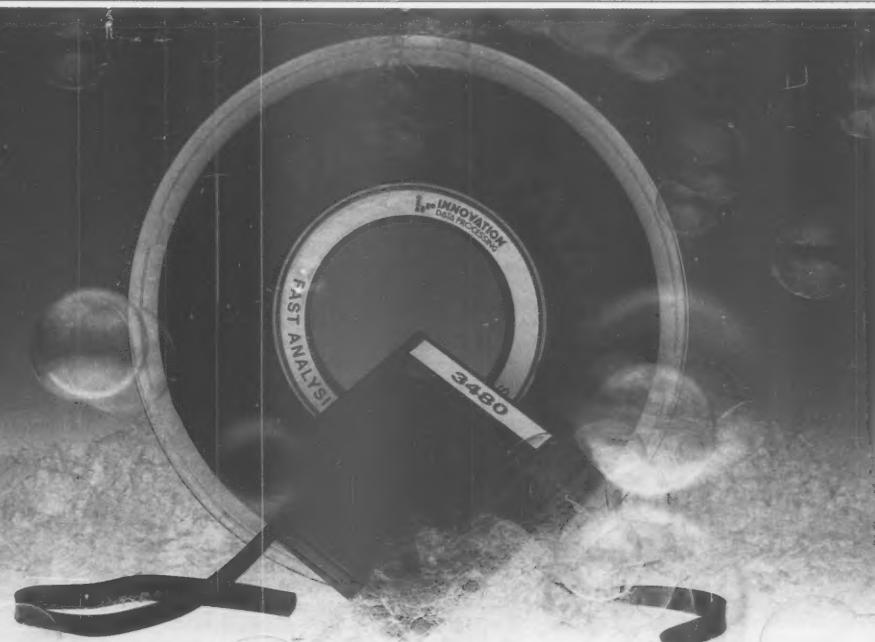
TOKYO — Compaq Computer Corp., the world's second largest maker of IBM-compatible personal computers, is moving into Japan, the world's second largest PC market.

Compaq ended three years of market study last week by opening Compaq K.K. According to a Compaq spokesman, the company expects to release a full range of XT/AT bus and Extended Industry Standard Architecture PCs for the Japanese market by the end of first-quarter 1992.

The spokesman also said Compaq will not attempt to create an NEC Corp. clone. NEC is the dominant vendor of PCs in Japan. Compaq will support DOS/V, the standard Japanese PC operating system, but said its Japanese-market PCs would be usable in any language around the world. Most vendors produce Japan-specific machines.

Spokesman John Sweeney said Compaq chose to enter the market now because the Japanese are moving toward a standard PC architecture.

Compaq named 29-year IBM Japan employee Masaru Murai president of the Japanese subsidiary.



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## IBM sales

FROM PAGE 1

IBM skirted recent speculation that it might lose money, reporting a \$114 million profit for the second quarter — a 92% drop from profit logged during last year's second quarter. Revenue fell 22% in the year-over-year comparison, to \$8.2 billion.

Perhaps more distressing than the numbers was their source: IBM's equipment sales — the company's traditional stock in trade — fell a precipitous 22% from sales logged in last year's second quarter.

## When's the rebound?

Analysts were relieved that IBM stayed profitable but cautious about how quickly the company can turn things around.

"The economy will rebound at some point," said Martin Resinger, an analyst at Duff & Phelps, Inc. "IBM will make it through its product transitions."

But, he added, "competitive pricing isn't going to go away. It's going to get worse."

Several analysts said that quantity shipments of new Enterprise System/9000 mainframes could buoy fourth-quarter sales, traditionally the firm's strongest. That was a message IBM drove home, telling analysts it believed it could sell as many of the new systems as it could build this year.

Apple, once IBM's counter-

culture competitor and recently its key strategic ally, etched its own worry lines on Wall Street last week. Its revenue increase of 12% was clouded by a \$53 million net loss that analysts did not expect.

Given the guidance he was getting from the company, "I didn't expect anything that bad," Duff & Phelps analyst Brandy Brandon said.

Two popular Macintosh mod-

## A bite out of Apple

Because of its strategy of lower priced systems, Apple Computer, Inc.'s revenue growth has been only half of its unit sales growth



	Revenue	Unit sales
First-half 1990	\$2.84B	1.6M
First-half 1991	\$3.27B	2.1M
Growth rate	15.14%	31.25%

Source: Computer Intelligence/Infocorp

els — the LC and the Classic — helped boost Apple's revenue to \$1.53 billion for its fiscal third quarter ended June 30, up 12% from the comparable quarter last year. But whopping restructuring costs hurled the firm \$53 million into the red.

About \$100 million of the restructuring charge has been budgeted to move facilities out of the costly Silicon Valley and into less expensive locations, according to Apple.

AT&T's profit swelled 26%

to \$828 million on revenue that increased by 5% to \$9.5 billion. In a prepared statement, AT&T Chairman Robert Allen said that he anticipated continued strong performance in the second half of the year, based on the assumption that the economy is picking up steam.

But Allen also said that anticipated restructuring charges, including those associated with the firm's merger with NCR, could offset profit by as much as \$4 billion before the year is out.

Also joining in on restructuring accounting was Texas Instruments, Inc., which posted a \$157 million quarterly net loss on revenue up 6% to \$2 billion. The quarterly loss included a pretax charge of \$130 million to fund an aggressive employee reduction program aimed at slashing TI's worldwide head count by 3,200.

Lotus Development Corp., meanwhile, logged a 5% revenue increase to \$186.4 million; profits plummeted 61% to \$9.1 million, however. Lotus Chief Executive Officer Jim Manzi, in a prepared statement, said the loss was a result of ongoing product line transitions and that the firm expects product shipments during the second half of 1991 to translate into stronger numbers.

by 1993 [CW, Nov. 12, 1990].

The banks said last week that 70 branches will be closed and 6,200 people will be laid off if the deal goes through. Both banks instituted hiring freezes the day the merger was announced.

"There will be thousands of [IS] layoffs," predicted M. Arthur Gillis, president of Comput-

**T**HERE ARE significant opportunities to improve the level of quality and array of services."

MICHAEL ZUCCHINI  
FLEET/NORSTAR  
FINANCIAL GROUP

er Based Solutions, Inc., a New Orleans banking systems consultancy. "Banks' noninterest expense item on the profit-and-loss statement is going to look beautiful at the cost of the people who have to bear the burden," he said.

However, more benefits than just cost reductions may be realized. "There are significant opportunities to improve the level of quality and array of services," said Michael Zucchini, executive

vice president at Fleet/Norstar Financial Group in Providence, R.I., which completed the acquisition of the Bank of New England last week.

"It's been my experience that with a common base of technology, you can make available new products faster," said Zucchini, who declined to comment on the proposed Chemical/Manufacturers Hanover merger.

About one-third of the 3,000 employees in IS and operations have been laid off in the Bank of New England acquisition, with a projected savings of \$90 million in those areas, Zucchini said.

Manufacturers Hanover and Chemical "have some real tough decisions to make," said Judge Fowler, senior vice president and director of systems development at the First Union National Bank in Charlotte, N.C. "Historically, large banks have not made decisions very quickly."

Fowler has lived through similar situations — numerous times. First Union Corp., the bank's parent organization and the nation's 16th largest banking company, has acquired 25 banks in the past six years. "At least 1,000 consultants will want to come in and help them, but I don't think you can buy your way out of it."

Senior Editor Clinton Wilder contributed to this report.

## Sun's latest means to prevent market eclipse

BY J. A. SAVAGE  
CW STAFF

Already under assault in the high-performance workstation race, Sun Microsystems, Inc. is scheduled to announce today systems designed to stave off competition looming in low-priced systems.

Sun said it will replace the Sparcstation SLC with the ELC model. Priced the same as the earlier model at \$4,995, the ELC has a faster clock and is rated at 20.1 Specmarks (the benchmark of the Systems Performance Evaluation Cooperative), up from 8.8. Sun will also reduce the price of its IPC model, introduce a higher performance IPX and improve the performance of the Sparcstation 2.

However, analysts said last week that the interim measures of increased performance and decreased cost on Sun's current line pale under the threat of low-priced workstations expected from IBM and Hewlett-Packard Co. by the end of the year.

Sun has said it would have a high-end multiprocessor system by the end of 1991, and despite persistent speculation to the contrary, the company is sticking to that time frame, a spokesman for the firm said.

Following that system, according to sources, Sun will develop its next-generation line around the next release of the Scalable Processor Architecture (Sparc). Chips from that version are expected to become available later this year.

According to Joe Nichols, director and vice president of marketing at Ross Technology, Inc. in Austin, Texas, the Sparc chip that Sun will be using in its next generation of workstations, code-named Pinnacle, should have "slightly higher" millions of instructions per second rating than HP's 76 MIPS.

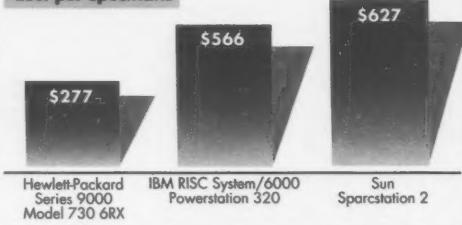
## A shake-up in sight

Momentum alone may be sufficient to keep Sun in the No. 1 market share position over the short term. But, said Andrew Al-

## Overshadowing concerns

Sun Microsystems, Inc., which gained fame with low-cost, high-performance systems, has seen Hewlett-Packard Co. and IBM muscle in on its turf

## Cost per specmark



CW Chart: Janel Genovese

Sun remains the dominant player in the market for reduced instruction set computing systems with more than 50% of sales, but both HP and IBM have raised the ante with high-end systems that offer either a price or a performance advantage.

Steve Tirado, product line manager at Sun, acknowledged that HP's Model 700 has better I/O performance but said Sun's products remain less expensive. "We may not beat them, but we're close," he said.

## Prospects dimming?

Not everybody sees it that way. "From what I can see, Sun is lagging behind," said Bill Grundy, software program manager at Hitachi America Ltd.'s Semiconductor and Integrated Circuit Division in Brisbane, Calif. Grundy said he is evaluating new Sun machines, but "HP looks like a clear winner."

lison, editor of the "RISC Management Newsletter" in Los Altos, Calif., "next year, things might change" in the face of increased competition from HP, IBM and the Advanced Computing Environment consortium.

In the meantime, Sun is expected this week to reduce the price of the Sparcstation IPC, a color, disk-full model, from \$9,995 to \$6,995. The IPX, the successor to the IPC, is priced at \$13,495, with speed more than doubling, from 11.8 Specmarks to 24.2.

Last, Sun will provide a performance kick to its Sparcstation 2, which was introduced in November 1990. Its Specmarks will jump from 21.2 to 24.7, utilizing a software compiler pre-processor from Kuck and Associates, Inc. in Champaign, Ill., that will not be available for 90 days. The price will increase from \$14,995 to \$15,495.

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# Guide pulling for IBM

BY ROSEMARY HAMILTON  
CW STAFF

BOSTON — Although IBM's recent financial performance has raised serious concerns throughout the industry, the company can at least count on its most influential user group to keep the faith.

"We have confidence in IBM that they will continue to ship the products and services the membership wants," Ben Parke, president of Guide International Corp., said in an interview at the IBM large-systems user group meeting held here last week.

Parke also noted that bad news for IBM becomes bad news for Guide, so "it is in our best interest" to see IBM pull out of its sales slump.

He said he expects that to happen because the firm is implementing a sound large-systems strategy. Parke said Guide's only complaint is that it would like to see IBM deliver products faster.

"IBM's customers always want it to do more," Parke said. "Surely, they would say, 'Why can't you deliver software products faster?' They will probably never meet expectations there."

Guide was launched in 1956 and today



Parke says IBM's good health is in Guide's interest

IBM. At each of its three yearly meetings, which are closed to the press, Guide compiles a list of product requirements and presents them to IBM.

includes members from 2,500 firms. While it has long been known as the big-iron user group, Guide also includes users of Application System/400 and RISC System/6000 systems.

The organization has a close and very private relationship with

Parke said IBM continues to meet Guide requirements in its large-systems efforts and added that the group is pleased with its work so far on both the AD/Cycle and Systemview strategies. Some of the new technologies introduced at the System/390 launch were also direct responses to Guide proposals.

## FBI snags DEC thieves

BY CAROL HILDEBRAND  
CW STAFF

The Federal Bureau of Investigation snapped a ring of thieves last week that allegedly netted more than \$6.4 million by selling stolen computer boards and other products from Digital Equipment Corp.

DEC, which has filed a civil racketeering suit seeking profits lost as a result of the alleged scam, said it cooperated with the FBI during the 2½-year probe. The civil suit, filed June 12, names 20 persons, some of whom are also named in the federal suit, DEC spokeswoman Nikki Richardson said.

In a separate incident, Kris David Wise, a former DEC employee, was charged last week with attempting to sell stolen DEC boards worth more than \$500,000.

The thefts are hardly an isolated event in the computer industry, observers said.

The Digital Dealers Association has cooperated with DEC on more than five occasions with respect to suspected stolen property, according to James Claypoole, chairman of the Ethics and Industry Practices Committee of the association, a confederation of used equipment dealers.

"It is in our best interest to get to the bottom of the theft rings because it creates unfair competition to us legitimate dealers," Claypoole said.

Former DEC employee Steve Kleime, now at reseller Computer Sales International in St. Louis, said he was not surprised when he heard about the thefts. "I worked for DEC for 9½ years," he said. "This was going on clear back in the early '80s." Kleime said he thought DEC was a popular target because it did not keep close track of serial numbers, making it easy for a machine to disappear.

Following the return of a 158-count indictment in Boston's U.S. District Court, the FBI and the Internal Revenue Service began arresting 16 individuals on charges of racketeering, money laundering, transportation of stolen property and money transaction violations.

The indictment alleged that the defendants used a contract held by Windham Recovery Systems, Inc. and bribed warehouse employees to gain access to DEC warehouses in Athol, Mass., and Whitinsville, Mass.

The stolen equipment was resold through two main conduits: The Moore Group, Inc. and KBG, Inc.

The FBI is seeking control of assets obtained as a result of the activities, which reportedly took place from February 1989 to September 1990, as well as \$6.4 million in profits. Among the items subject to forfeiture are a Ferrari Testarossa, a Jaguar convertible and all of the stock in China Grill, a Boston restaurant.

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Michael L. Sullivan-Trainor, Senior Editor, Computerworld, in the March 25, 1991 issue

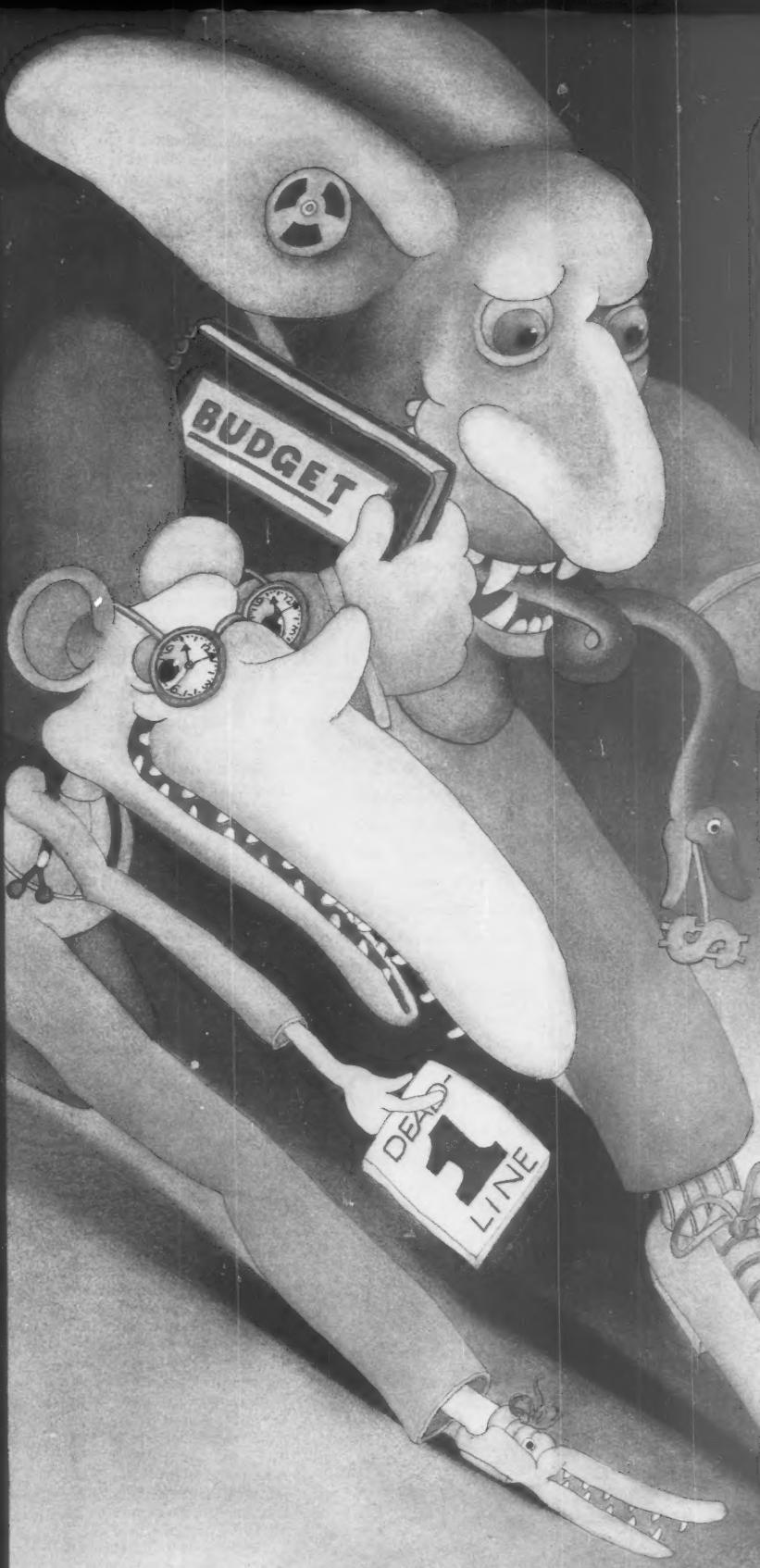
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# OSI wooing large-business users with Netexpert

BY ELISABETH HORWITT  
CW STAFF

FOLSOM, Calif. — A 14-person company formally started targeting end users last week with a network management system that, according to several satisfied customers, delivers the

functionality, ease of use and multivendor openness that the industry's big hitters have been promising for years.

After targeting OEMs and carriers for about two years, Objective Systems Integrators, Inc. feels ready to go after business users, spokesman Richard Vento

said. Priced at about \$300,000, Netexpert is slated for large corporations that rely heavily on complex multivendor networks.

That end-user market seems to be ready and waiting. Three large businesses, which requested anonymity, said they plan to include Objective Systems in re-

quests for proposals currently in the works for integrated network management systems. Objective Systems is doing "ongoing consulting" at American Express Travel Related Services Co. on developing expert systems-based network management applications, Vento said.

DHL Worldwide Express "has a strong interest" in the kind of functionality that Netexpert is said to provide, said John Payne, a communications architect at the package handler. "So we would view the system very favorably if it proves out."

Netexpert brings to its new market an impressive list of industrial-strength customers. Regional operating company Pacific Bell and global carrier Infonet Services Corp. are using the product to monitor and troubleshoot the networks that serve their customers. I-Net, Inc., a Washington, D.C., network systems integrator and facilities manager, now uses Netexpert to tailor network control center operations to individual customers, a spokesman said.

Infonet likes the flexibility with which Netexpert can be configured to the carrier's par-

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**N**ETEXPERT IS slated for large corporations that rely heavily on complex multivendor networks.

ticular configuration of network devices and connections, said Jim Anderson, director of engineering and software development. "There is no such thing as a shrink-wrapped network management system because each user's network is different."

Products from Nynex Corp., AT&T and IBM "provide a baseline product that is not terribly open, and if you want to do anything special, you have to contract for the vendor's services," Anderson said.

"Netexpert allows you to filter, parse and correlate alarms from multiple proprietary element management systems," said Roy Horak, executive vice president at Mill Valley, Calif., consulting firm The Lido Organization, Inc. "Many systems do that now, but they tend to be focused on a particular networking product or computer manufacturer's view of the world."

Pacific Bell was impressed by Netexpert's rule-based system for determining which user devices and circuits would be affected by a given outage, systems analyst Rod Rucker said. The local carrier began using Netexpert in April for one high-priority customer service and intends to use it to monitor its 45M bit/sec. backbone, he said.

Objective Systems plans to build a support organization to handle end-user customers, Vento said.

Netexpert runs on Sun Microsystems, Inc. Sparcstations. It is said to support more than 20 proprietary network interfaces, Open Systems Interconnect protocols and IBM's Netview.

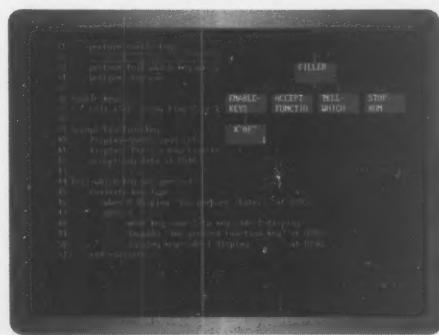
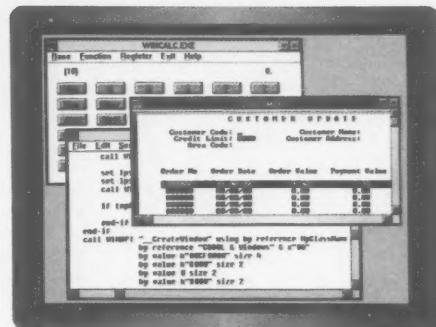
# Why is Micro Focus Saving So Many People So Much Money?

## Graphical User Interfaces?

Graphical User Interfaces (GUIs) are becoming an important part of today's information processing environment and Micro Focus products give developers three user interface development options.

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Besides the functionality offered within the compiler, Micro Focus also offers Dialog System™, a high-level interface development package that offers the ability to quickly and easily develop both GUI and character-based user interfaces completely independent of the COBOL application. Applications developed with Micro Focus's GUI technology are faster to develop and make users more productive.



## Productivity Tools?

Micro Focus has been making COBOL programmers more productive since 1976 by supplying state-of-the-art tools and utilities that cut development time.

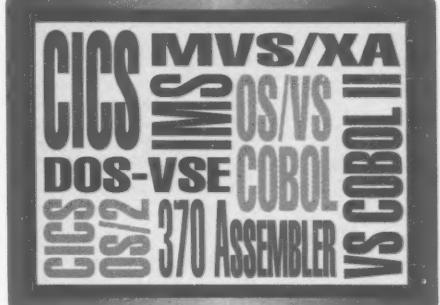
No other source code debugger in the industry provides better facilities for program testing and analysis than ADVANCED ANIMATOR™. This unique debugger allows developers to step through program execution line-by-line, monitor data items in windows, even create a structure chart from an existing COBOL program.

Micro Focus COBOL/2 Workbench™ also offers: Analyzer™, a utility that tracks the number of times statements are executed; COBOL Source Intelligence (CSI), a valuable maintenance and re-engineering tool; Session Recorder™, a powerful utility for developing interactive application test suites, and many other labor-saving tools that help produce high-quality applications quickly. Users typically experience an increase in productivity of 25%-50% immediately.

## Mainframe Compatibility?

Micro Focus brings the power of mainframes to the desktop by offering comprehensive MVS/XA™, IMS™, CICS™, CICS OS/2, OS/VS COBOL™, VS COBOL II™, DOS-VSE™ and 370 Assembler environments on the PC. With Micro Focus COBOL/2 Workbench, application development can be moved from the mainframe to workstations. That means more efficient application development, faster response times, less mainframe traffic and reduced access charges. Micro Focus also offers unique utilities that take the guess-work out of file transfers, source file conversions and data file conversions.

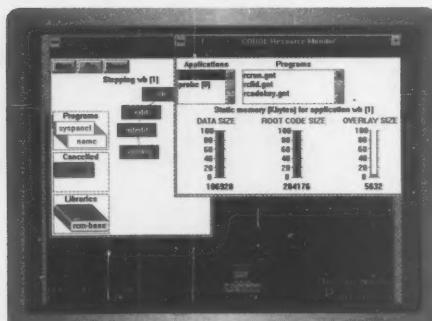
Micro Focus has been chosen as the newest IBM® AD/Cycle Business Partner. With Micro Focus COBOL/2 as the PC COBOL for IBM's SAA™ strategy and COBOL/2 Workbench, IMS Option, CICS Option and MF/370 as key components of the AD/Cycle Produce, Build, Test, Production and Maintenance Phases, Micro Focus offers the most complete COBOL programming environment available anywhere. In addition to improved productivity, TSO savings average up to 80%. These savings are enjoyed by both maintenance programmers and those doing new development.



## Object Orientation?

Object Oriented COBOL programming isn't just a dream. At Micro Focus, it's becoming a reality. The Object Oriented Option for Micro Focus COBOL/2 Workbench, now in controlled release, offers COBOL developers two object oriented development options. The Object Oriented COBOL development system brings OO capabilities to the COBOL runtime system by allowing multiple copies of COBOL programs to exist concurrently as "objects." A preprocessor, class library and class hierarchy browser are planned for future releases.

The OO Option also allows developers to write OO programs in Smalltalk/V PM® (a true OO language) and then link those applications to a COBOL program running in DOS or OS/2. The OO Option for Micro Focus COBOL/2 Workbench promises great savings for the future through code reusability and reduced maintenance costs.



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# “To us, SAA is the future, and we’re not waiting for it to happen, we’re making it happen.”

Daniel Cavanagh, CIO  
Metropolitan Life Insurance Co.

To say that Metropolitan Life has a history of farsightedness is putting it mildly. They were the first insurance company to install a computer system.

Today that vision continues with their use of IBM Systems Application Architecture™, or SAA™. In fact, while some companies have been “wait-and-see” about SAA, MetLife is decidedly pro-active.

“Nobody ever accomplished anything by waiting,” says Daniel Cavanagh, MetLife’s CIO, “so when SAA was first announced, we organized a team to study it, to see how it could help us.

“Right away we found advantages. One, SAA is a standard that MetLife, our suppliers and customers can all use and understand. Two, it works with elements we already have. When you’ve got 35,000 users and 140 million lines of code, that’s important. Three, it’s an architecture that supports our plans for future cooperative systems. And four, SAA looked like it could improve our development process.”

## An application.

As tools for building an SAA system became available, MetLife built one. It’s interesting to note where.

“Our first application is for underwriters, who have a direct effect on our bottom line.”

Underwriters decide if an insurance applicant is a good risk, and risk is what determines the policy’s price. Doing the job right means cross-checking several databases.

“Before SAA,” says Mr. Cavanagh, “our underwriters paged through screens in sequence, scribbling notes as they went. Now, using OS/2®, they can see several remote

and local applications at once, in windows on the screen. So it’s easier to compare sources, to make better decisions to respond more quickly. They’ve got more time to go the extra mile, both for the company and the customer.”

## An expectation.

“Also, MetLife intends to grow, but not at the expense of service. With our SAA systems, we expect to provide faster, higher quality service as our business expands.”

For a new technology, SAA has been surprisingly versatile, in part because SAA makes it easy to plug in modules. The word processor for the underwriter workstation was purchased from one vendor, the help system from another, and both were integrated with MetLife’s application.

## A reaction.

“But the important thing to know about our move to SAA,” according to Mr. Cavanagh, “is how we’re doing it. We don’t have a timetable for going ‘all SAA.’ That’s not realistic. What we do have is a plan to create SAA applications as needs arise. We’re showing the underwriter’s application around the company and already people are saying, ‘That’s great, how can I get something like that?’

“SAA just isn’t an all-or-nothing deal. You can build as you need, and you learn as you go. But if you don’t start, you never get anywhere.”

“We have started, and so far we’re quite pleased with the results.”

To learn about SAA at  
Metropolitan Life in more detail, call  
IBM at 1 800 IBM-6676, ext. 852.



# Businesses wise up to potential benefits of AI

BY JEAN S. BOZMAN  
CW STAFF

ANAHEIM, Calif. — Artificial intelligence is not just for rocket scientists and academics anymore, according to users who gathered at the American Association for Artificial Intelligence (AAAI) conference last week. Airline information systems staffs, petroleum engineers, submarine designers and steel makers have jumped on the AI bandwagon during the last two years, according to some of the 3,600 conference attendees.

Many are adding inference engines and expert systems to update or modify applica-

cations programs. "I came here to see what's coming out of the AI labs so I can figure out what kind of features will be appearing in commercial products two or three years from now," said a Northrop Corp. software planner.

In many cases, IS planners are looking to AI to shorten applications development time and to add new flexibility to aging applications.

New AI tools coming to the market allow users such as Shearson Lehman Brothers, Inc. to create new applications in six to eight weeks, compared with former development schedules of six months or more, said Tom Murphy, a first vice

president at Shearson Lehman who spoke at the conference.

Many other applications were cited by users, including the following:

- Longtime AAAI member Roberto Gonzalez, a senior software manager at Venezuela's Lagoven SA oil company, said he used AI techniques to harness part of one senior engineer's 30 years of well-pumping experience into an expert system.
- Stuart J. Brown, a self-described "LISP hacker" and 20-year U.S. Navy veteran at General Dynamics Corp.'s Electric Boat Division in Groton, Conn., used case-based reasoning techniques to plan engineering-design changes for Seawolf-

class submarines. Case-based reasoning, predicated on Roger Schank's theoretical work at Yale University in the 1980s, allows computers to recall past events and then make inferences that can be applied to present problems.

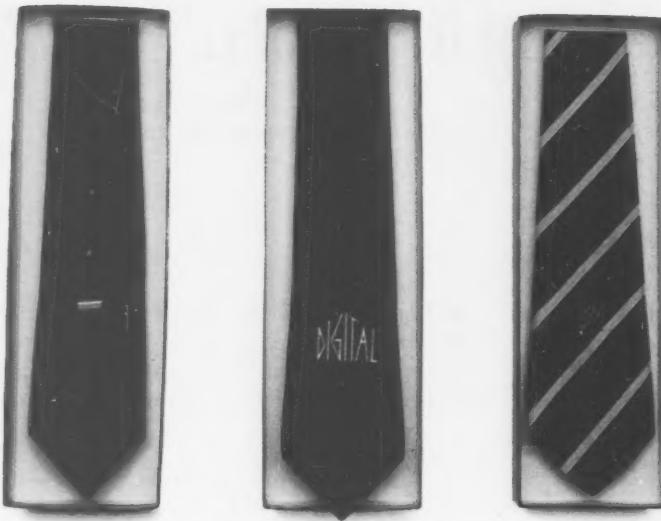
Systems like these are cited by AAAI organizers as evidence that AI has become useful to corporations that need to re-engineer applications written in the Cobol or C languages.

Rather than throwing such "legacy" systems away, AI is often embedded in the existing code to adapt it to changing business conditions.

"You see lots of new mechanisms [in the computer industry] for data access and data movement," said AAAI President Daniel Bobrow, a research fellow at Xerox Corp.'s Palo Alto Research Center. "We want to turn that into knowledge access and knowledge movement."

"The major theme is the tight integration of AI with existing systems and the further hiding of AI or expert systems at the back end," said Natasha Krol, program director for applications development strategies at Meta Group, Inc. in Westport, Conn.

## Open The Box



## Now Ross uses Digital's NAS to open business ties.

Now there's a way to tie your existing applications together — without tying your organization in knots. It's Digital's Network Application Support (NAS), a set of standards-based software that enables Ross Systems financial, distribution and human resource applications to work with the departmental and end-user systems you already have. No matter what their stripe.

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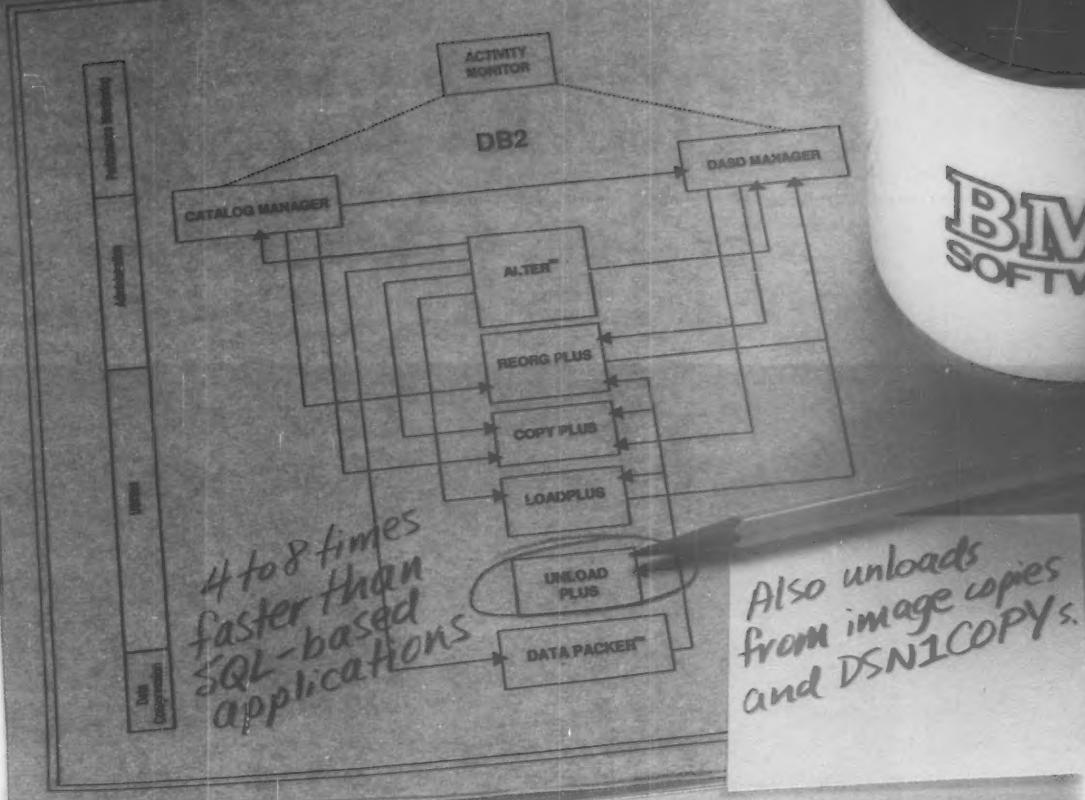
**ROSS SYSTEMS**

## Show and tell

Major AI vendors used the AAAI conference as an opportunity to unveil new features and functions for their software and expert systems products. Highlights included the following:

- Neuron Data, Inc. in Palo Alto, Calif., announced runtime versions of the Nexpert Object knowledge-based systems development environment for IBM's CICS under the MVS operating system and for Tandem Computers, Inc.'s Nonstop operating system.
- Inference Corp. in El Segundo, Calif., announced ART-IM/MVS 3.5, a new release of its ART-IM knowledge-based systems development tool that was designed to be used with the IBM MVS operating system for mainframes.
- AI Corp. in Waltham, Mass., said its KBMS knowledge-based management system can now run as an application under Microsoft Corp.'s Windows 3.0 environment. It had previously run under OS/2.
- Aion Corp. in Palo Alto announced a version of Aion Development Systems for Digital Equipment Corp.'s VAX/VMS environment.
- Information Builders, Inc. in New York said its Level 5 Object product had been adapted to work on DEC's VAX/VMS systems and would be interoperable with the Level 5 product for desktop computers running Windows 3.0.
- DEC in Maynard, Mass., said it would market several AI consulting and training services for outside customers. One program, called Fastrak, provides a one-month intensive training course at DEC's AI Training Center in Marlboro, Mass.

JEAN BOZMAN



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from the new DB2 user to those with multiple production applications and multiple DB2 subsystems. MASTERMIND™ for DB2\* products include:

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To help you build on DB2, BMC has developed a blueprint of the DB2 environment in an informative poster, "DB2 — The COMPLETE Picture." For a free poster, more information, or to start a 30-Day-Plus Free Trial of UNLOAD PLUS or any of BMC's other DB2 products, send your request by fax to 713 242-6523 or call BMC toll free at

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## ADVANCED TECHNOLOGY

## TECH TALK

## Animated pictures deal

■ Pixar and The Walt Disney Co. have inked a pact under which Pixar will create one or more feature-length animated films to be distributed by Disney's Buena Vista Pictures Distribution. Originally formed in 1979 as the Lucas Film Computer Graphics Division, Pixar was acquired by Steven Jobs, co-founder of Apple Computer, Inc., and the employees of Pixar in 1986. Pixar has won several awards for its computer-generated animated films, including an Academy Award in 1988.

## Microscopic chips in sight

■ Scientists at IBM have picked up individual silicon atoms and deposited them precisely, raising the possibility that electronic devices could be created one atom at a time. The scientists used an IBM-invented microscope to show that it is possible to manipulate individual atoms or clusters of atoms. The scientists said the research is the first step toward a new field of electronics they called "nanoelectronics," but they added that significantly more research would be needed before the technique could be used commercially. IBM said this demonstration was important because it showed that its "scanning tunneling microscope" could be used to wrench atoms from silicon, as they are tightly bound and difficult to dislodge.

## Light matchmaker

■ New Mexico's defense laboratories and the University of New Mexico (UNM) will link their research expertise in lasers, sensors and other optical technologies. The new group, the Alliance for Photonic Technology, will work on commercial uses for light-based electronics research through joint programs at Los Alamos National Laboratory, Sandia National Laboratories, the U.S. Air Force's Phillips Laboratory and UNM. The group intends to act as a matchmaker for product-specific technology transfer, a director of the alliance said.

BY MICHAEL ALEXANDER  
CW STAFF

**G**eographical information systems (GIS) are showing up all over the place nowadays. The most active users and buyers of GIS technology include U.S. municipal governments, utilities, telecommunications firms, petroleum companies and mapmakers. However, the corporate market is growing rapidly, according to Market Intelligence Research Corp. (MIRC), a market research company based in Mountain View, Calif.

The GIS industry is currently one of the fastest growing segments of the computer graphics field, MIRC reported. Worldwide annual revenue last year of GIS software and services was \$2.6 billion and is expected to soar to about \$19 billion by 1995.

The popularity of GIS has grown, thanks to the lower cost and higher performance of personal computers and workstations. The cost of GIS software has declined, too, and that has helped trigger more sales. GIS software that runs on PCs and workstations ranges in price from about \$500 to \$30,000.

GIS programs are used to combine maps with demographics, corporate revenues, taxes — in short, nearly any kind of numerical information that normally shows up in tabular form. The maps and numerical information are layered in different combinations, allowing managers to make "what if" comparisons and uncover relationships that are not readily apparent when the same information is displayed solely in tabular form, said Anthony Burns, national marketing manager at Environmental Systems Research Institute (ESRI) in Redlands, Calif.

"You can have an unlimited number of layers and create new relationships by overlaying multiple layers of information," Burns said.

Before underwriting property insurance, for example, an insurance company can combine a map showing several city blocks with such data as past claims for fire, flood and other catastrophes; proximity of fire and police stations; kinds of buildings adjacent to the property to be insured; and other pertinent data.

## Marketing applications

GISs have been especially popular with large retailers, which use these systems to analyze household income, family size and other demographic data when selecting a site for a new store or preparing to launch a marketing promotion.

"There has been a tremendous up-

swing in the commercial sector in the last two years," Burns said. ESRI, whose founder, Jack Dangermond, is considered the father of commercial GIS, has developed what is widely re-

tune 500 is using or experimenting with GIS, according to Giulio Maffini, chief executive officer of Tydak Technologies Corp.'s U.S. operations in Arlington, Va.

According to Maffini, GIS technology is often adopted by a corporation with the urging of "adventurous IS processing people who are interested in staying in the forefront." Other times, a senior executive who has some passing familiarity with GIS or a market researcher or other professional responsible for strategic planning will act as a champion for the technology.

Tydak markets a family of GIS programs called Spatial Analysis System, or Span for short. IBM currently markets Tydak's GIS products and earlier this year bought a stake in the company.

Most GIS software for the PC and workstation market runs under industry-standard operating systems and works smoothly with popular relational databases. While implementing a GIS is relatively easy, it requires a change in mind-set, Maffini said.

"Few people realize that to get into GIS, you really have to make a commitment to revisiting the whole data model in the organization," he said. "It is not a matter of throwing everything out, but you have to be careful about geographically referencing information."

## Relative importance

Geography cannot be treated as just another attribute in a relational database or "you will miss the boat," Maffini said. "Geography is more than that — it is not just absolute but also relative."

From a relational database containing descriptions of every piece in a jigsaw puzzle, it might be possible to discern what the picture may be, Maffini said, "but it is not until you snap the pieces in the right way that you will know for sure."

Several companies as well as federal, state and local governments have gotten into the business of selling data that can be pulled into a GIS. The cost of acquiring data and converting it to run on corporate systems is the most dominant expense in implementing a GIS, according to MIRC. However, the market research firm added, those costs are starting to fall.

The federal government and several companies are involved in digitizing maps of the nation as well as many overseas territories that will eventually be marketed as an off-the-shelf base map, according to MIRC.

Also, as the number of GISs expands, more base maps will be available, and there will be no need to duplicate the efforts of others.



David Fisherty

garded as one of the most sophisticated GIS programs, Arc/Info. The program contains tools for map automation, spatial analysis, interactive display, address geocoding and database integration and management.

Petroleum companies are among the early GIS adopters who use the systems for making geographical models, mapping pipelines and the like. Increasingly, they are using GISs to help in the processes of site selection and plotting marketing strategies.

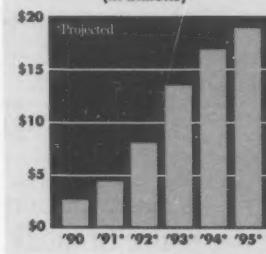
"Gasoline prices fluctuate dramatically, yet you see stations in an area like Los Angeles adjust their prices almost concurrently," Burns explained. "I think GIS is helping them see the picture of competition a lot more quickly."

Virtually every company in the For-

## Money to be made

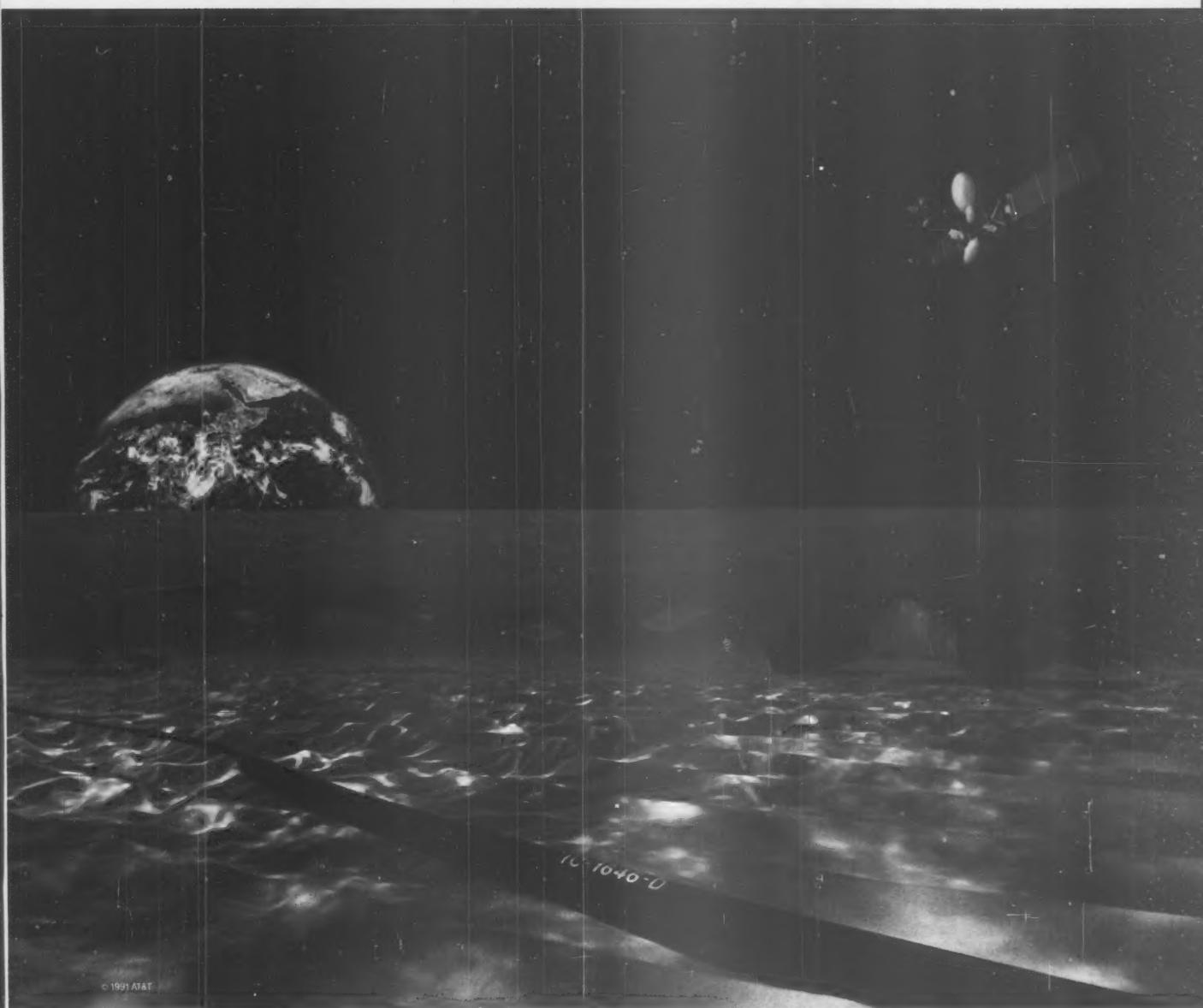
*PC affordability has lowered the barriers for vendors and users to enter the geographical information systems (GIS) field*

## Worldwide revenue for GIS software and services market (in billions)



CW Chart: Doreen St. John  
Source: Market Intelligence Research Corp.

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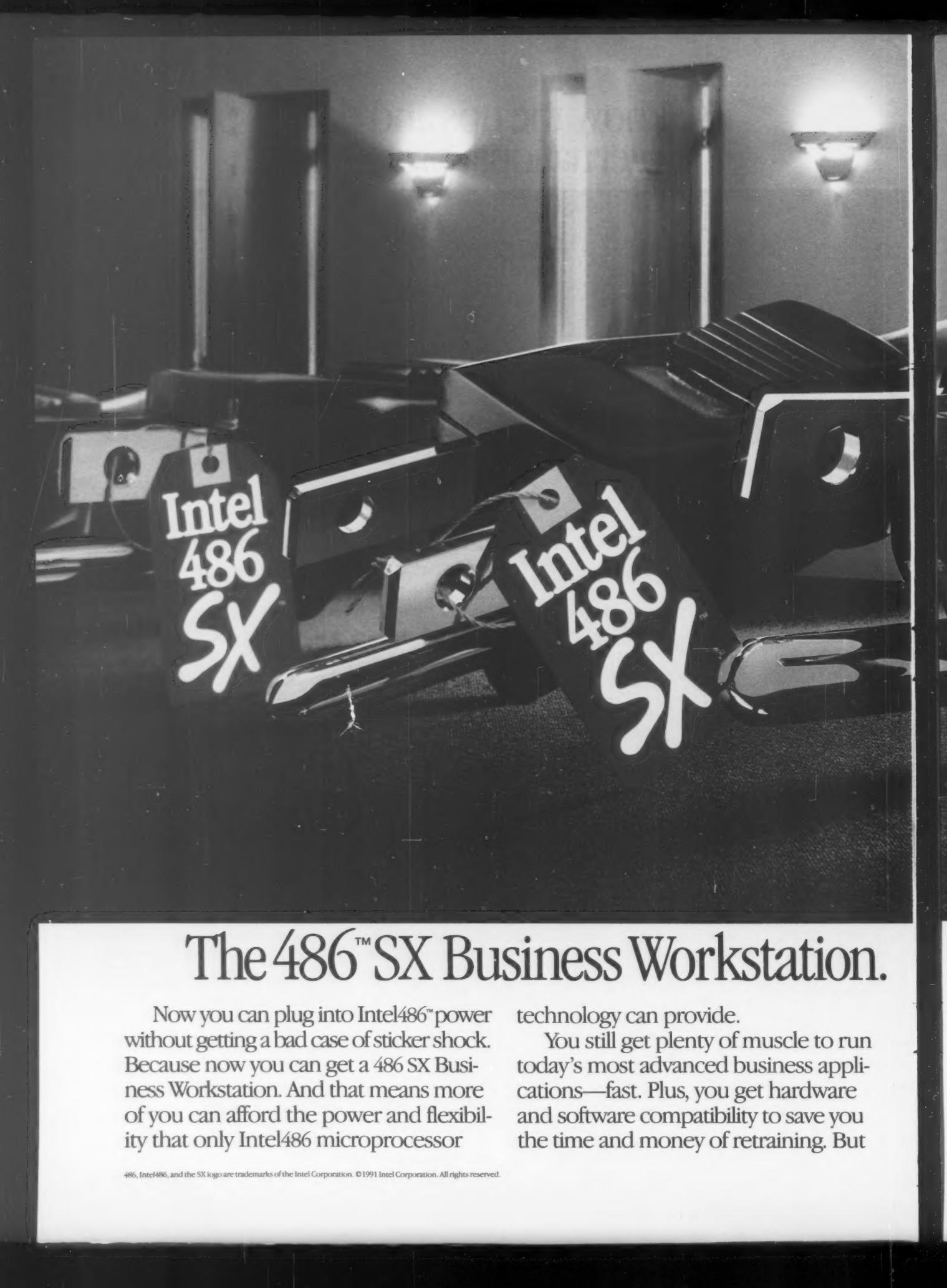
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## EDITORIAL

## Two arms!

Are users really in control, as we've been saying here for some time?

According to an executive we spoke with at Novell, the answer is yes. They just don't fully know it. He said it's like the trained elephant analogy, which goes this way:

Elephant training begins when the animal is very young. It is tethered to a stake in the ground and when the animal tries to pull away and wander, ouch! So in time it learns to stop pulling at the first sign of tension.

Within a few years, the baby has grown into the most powerful living thing on land, capable of toppling significant trees to get at the tender top-most leaves. But when tethered to that now small stake, it still resists tugging beyond the first sensation of tension.

In other words, it doesn't know its own strength.

Look around today and see an industry that, despite the up-tempo in merger activity and the growing number of consortia and alliances, is really coming apart at the seams. When you inspect that which is usually billed as an alliance or merger to benefit the customer by way of the promulgation of "standards," generally what you'll find are vendors or groups of vendors posturing against one another: OSF vs. AT&T; IBM and Apple vs. Microsoft; ACE vs. Sun; Borland vs. Lotus and Microsoft. And so on.

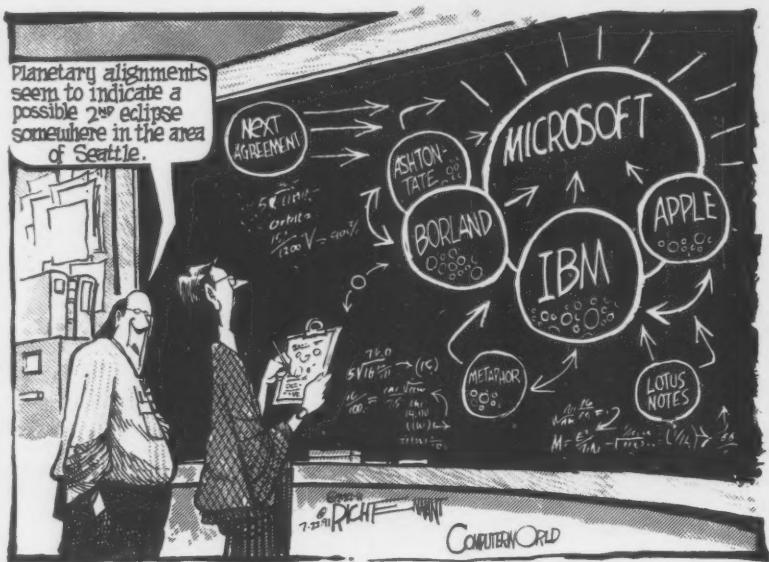
All of these alliances and most of the others tout openness and standardization as their goals. So why has the OSF produced incompatible versions of OSF-compliant Unix software? Why are so many groups and alliances lined up against Microsoft, which arguably has promulgated some of the few customer-driven standards in the marketplace? Or you might ask, what has Microsoft done to earn so much enmity?

Are they really driven toward standards? Or are we witnessing the final frenetic efforts to see that you, the customer, do not pull too hard on that tether?

Just consider for a moment what the inexorable march toward greater standardization is doing to so many leading vendors — it's pulverizing them. Apple posted a startling loss, the result of plunging hardware profits across the PC industry because of the increasingly commodity nature of PCs. IBM's proprietary hardware gig is under extreme pressure by emerging client/server technologies that stress openness and scalability.

Is it any wonder that IBM has shunned the SQL Access Group, a 40-member clan doing some positive work to actually speed up the standards process?

If you are cynical, you could conclude that plenty of people out there have a lot at stake in *that* stake staying just where it is — in the ground. But what a growing number of users are finding is that it doesn't take more than a little spit between the palms, a little tugging with both hands and voila! They discover that the world of choice has gotten bigger, not smaller.



## LETTERS TO THE EDITOR

## Wrong target

Regarding "IBM should remember that shots can ricochet" [CW, June 3], I disagree with Kenneth A. Bouldin, who said, "Lessees have long taken for granted the idea that equivalent replacement and reconfiguration parts... are equal in value to the original components and therefore do not alter the original asset."

A theory of politics is, "If you tell a lie often enough, people will think that it is true."

How can a PCM memory company trade your IBM memory for twice as much of its own memory if each memory is worth the same, byte for byte?

Rather than venting this disinformation at IBM, why doesn't the Computer Dealers and Lessors Association (CDLA) take on the Japanese vendors who really do play this game by a very different set of rules?

Perhaps IBM's shots will ricochet. Such an accident is, in my opinion, far more forgivable than aiming the gun in the wrong direction, as the CDLA and its minions are doing.

Eric R. Lewis  
Madison, Wis.

## Money talks

With regard to "Time-sharing is alive and well" [CW, June 3], it is interesting to note how vendors in each of these arenas have positioned their services.

In the glory days of time-sharing in the '70s and '80s, each vendor was providing a unique solution to something that the in-house shop could not provide in a timely fashion or, in some cases, not provide at all.

By utilizing proprietary soft-

ware or a generic programming language along with a remotely located computing facility, users could provide themselves with decision-support capabilities and management reports not otherwise available.

Today, the spotlight is on a similar yet different service called outsourcing. Many vendors have focused on its definition as providing computing operations from a remote facility. These services are really application-independent, with the client bringing its existing applications to the outsourcing's facility. Outsourcers are often referred to as computer utilities.

The primary decision-making criterion is one of economics. If it doesn't make good sense to outsource (read: save money or enhance margin performance), all of the ancillary value-added areas will not sway the decision in the outsourcing's favor.

W. Merle Orendorff  
The Genix Group  
Fairfield, Conn.

## Mistaken identity

I read "Teaching minis new tricks" [CW, June 10] with great interest but also with a sense of disappointment.

Jim Hammons categorized Parallan Computer's multiprocessor Server 290 with other "PC servers" and "super-servers," carrying that mischaracterization throughout the article. Hammons' review thus defined architectural and performance limitations that simply do not apply to our products.

Since we launched the Server 290 product family last October, we have consistently defined our system as an application server, and press accounts have con-

curred by generally using the description "hyperserver" for our product. The distinction is not semantic; it is fundamental to how we designed our product.

We agree that PC servers simply aren't up to the task of managing mission-critical applications. A new class of server now exists that decidedly is.

William B. Patton Jr.  
Chairman and CEO  
Parallan Computer, Inc.  
Mountain View, Calif.

## False security

Software piracy is a serious problem, and there is no denying that it costs software publishers. It is distressing, however, to see bulwarks of our legal system, such as probable cause and presumption of innocence, tossed aside in highly publicized shake-downs such as the one at Snap-on Tools [CW, June 17].

Any company wrongly raided by the SPA should be entitled to recover all expenses incurred, including the salaries of employees standing idle during the audit. It is unfortunate that the response of the falsely accused is along the lines of relief at being spared the inquisition, rather than outrage at having been corporately violated.

David L. Simson  
Burlingame, Calif.

Computerworld welcomes comments from its readers. Letters may be edited for brevity and clarity and should be addressed to Bill Laberis, Editor In Chief, Computerworld, P.O. Box 9171, 375 Cochituate Road, Framingham, Mass. 01701. Fax number: (508) 875-8931; MCI Mail: COMPUTERWORLD. Please include a phone number for verification.

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# Where does all the E-mail go?

CONRAD BLICKENSTORFER

More often than not, technology is ahead of society's ability to understand its implications. Cars came before traffic laws, airplanes came before air traffic controllers and telephones came before the FCC and wiretapping laws. The same is true for electronic mail.

Some 12 million people are now using E-mail, and the numbers are growing rapidly. That's understandable because E-mail is wonderful. It enables people to exchange notes in a way that is less formal than a memo but more formal than a phone call. These notes can be answered, annotated, commented on, saved, converted into documents or printed.

## What's it for?

The problem is that those in IS management are still puzzling over how to deal with E-mail. Some view E-mail as the modern-day replacement for "water-cooler talk." Others see it as a great tool to manage their staffs, to create project audit trails or as a personal tickler system. In any case, E-mail notes accumulate quickly and fill up huge amounts of disk space if they are not archived or purged. But can you just delete them from the system?

Often, users are the first to say no. They want to be able to locate that 15-month-old note

about a meeting or reconstruct what happened to a particular account three years ago.

But you can't simply allow user convenience to be the guide. There are also legal implications to retaining E-mail messages, and the problem is, no one is quite sure what those implications are.

So far, no case involving E-mail has reached the Supreme Court, and no definitive verdict has been delivered on how long messages should be stored and who should have access to those records. It is likely to stay this way for a while. Even the admissibility of electronic records in court remains a hotly debated issue.

Private business has substantial leeway as long as it respects the provisions of the Electronic Communications Privacy Act of 1986. The act says that messages sent over corporate E-mail are private if the E-mail system allows access from outside the company, but not private if the E-mail is strictly for internal use.

But that's not really a complete answer because there is considerable overlapping with other federal laws, such as the Privacy Act of 1974 and hundreds of state statutes covering everything from wiretapping to the restriction of access to cer-

tain types of information.

Most governmental agencies are also subject to the Freedom of Information Act (FOIA), which allow the public access to an agency's records. Since the FOIA's definition of records includes any written material that is stored on tape or disk, E-mail notes are available to the public

few of them, if any, have formulated E-mail policies.

A few months ago, the Electronic Mail Association (EMA) released a guide clarifying the implications of the Electronic Communications Privacy Act of 1986. The EMA suggests that every company create a policy to make it clear to employees what degree of privacy they can expect from E-mail. In addition to protecting employees, such a policy can also serve to protect the company from lawsuits.

Of course, that still leaves the question of where you can turn for advice in drafting an E-mail policy. You could ask your vendor, but chances are, it won't have the answers. A better option is to get together with your company's legal department. The lawyers may be able to clarify your legal obligations. If not, at least they will be equipped to research the problem, and they may be able to turn up precedents or special provisions that apply to your type of business or within your state.

Once a policy is drafted, get counsel and the chief executive to sign it and make sure that every E-mail user reads it. This is an area where technology is progressing far faster than the legal system. Don't get caught holding the bag.

Blickenstorfer is chief information officer at a public authority in New York.



John Geralis

and are subject to discovery in litigation unless they fall under an exemption such as privacy protection.

That doesn't mean a governmental computer center must retain E-mail indefinitely. Purging is permissible as long as there is an officially sanctioned records retention schedule. Many states have agencies that oversee such retention schedules. The trouble is that, so far,

# IBM: Divided it could thrive

PETER BARTOLIK

The biggest long-term problem facing IBM is that it and its investors are looking ahead to the days when its largest Enterprise System/9000 mainframes become available and an upturn in the economy revives demand for the big iron.

While it is inevitable that the economy will rebound eventually, there is no guarantee that demand for the latest and greatest in mainframe technology will also rebound.

In the meantime, the company is imposing an immense bureaucracy and cost structure upon operational units that, independently, might well be able to wage battle with the most nimble competitors.

Under trying circumstances that Mikhail Gorbachev could appreciate, IBM Chairman John Akers has spent the last three years trying to right a structure that history has overtaken. It may be time for IBM to confront the issue of whether confederation makes more sense than central control for the long haul.

Standing alone, IBM's semiconductor, PC and workstation, minicomputer, storage and even mainframe divisions would probably all be better off. Able to confront market challenges directly, without having to justify decisions to one another, these units could respond more quickly and effectively to customers and market forces.

Mainframe operations could be fine-tuned into a company with stable growth and high profits. This could only happen, though, if such a company was forced to meet its promises in a timely manner, without the assurance that off years will be made up by some other division.

Just imagine how effective the PC and workstations unit would be if it was freed of the current bureaucracy and overhead. A trim, independent IBM PC company could very well send Compaq and Dell into shell shock.

IBM is increasingly looking like a company where the sum of its parts are greater than the whole. Its long-term future would be better served by making those parts self-sufficient and free to compete with companies that are more single-minded. A dissolution into several independent companies could well produce both great returns for shareholders and a handful of vibrant competitors.

Bartolik is *Computerworld*'s news editor.

# 'Look and feel' litigation leaves users in limbo

*Vacillating court decisions only create uncertainty; it's time to rethink the legal standards*

ARDELLE C. ST. GEORGE

As software technology advances, the number and complexity of related litigation claims rise exponentially and courts are forced to find new ways to apply traditional property laws to computer software. What is overlooked, however, is that users often become injured parties in this process.

In dealing with recent cases, which involve the copyrightability of the "look and feel" or user interface of software programs, as opposed to simple questions of literal copying, the courts have had a much harder time establishing a consistent body of decisions.

Instead, the courts have preferred decisions that reflect a broad spectrum of statutory interpretations, from liberal to conservative, making it impossi-

ble for either developers or users to guess which way the pendulum will ultimately swing.

Actually, a move too far in either direction could be dangerous.

Many people are concerned that excessive patenting and licensing fees initiated by court decisions may create a deficit of low-cost, efficiently produced goods, because, although the plaintiffs in the current generation of cases claim their systems are unique, mimicking software interfaces to develop competitive (and possibly less expensive) products is the bread and butter of many smaller companies. If protection under the laws is broadened, the concern is that programmers will be prevented from utilizing user interfaces to improve software programs.

On the other hand, inadequate protection of developers' interests could also produce a slowdown of technological advancements as another kind of

adverse impact on the marketplace.

Speaking as a user as much as an attorney, I suggest that now is the time for the courts to reanalyze the entire intellectual property regime as it applies to computer software.

## Tough task

This won't be an easy task. The courts have long struggled to apply an appropriate mechanism to ensure intellectual property protection for software. In addition, Congress established the Commission of New Technological Uses of Copyrighted Works (CONTU) to find the appropriate legal vehicle.

Although CONTU determined that software is proper subject matter for copyright protection, erudite attorneys, government agencies and even the software industry have questioned whether computer law is fundamentally incompatible with software technology protection.

Other forms of intellectual property protection are also used, which has also initiated dispute.

Commentators disagree among themselves as to the appropriateness of the type and extent of protections that should be afforded to an author of a computer work, and the litigation continues.

It is presumably uncontested that some form of protection for software is required to encourage invention. However, so long as the Constitution espouses two — sometimes opposing — perspectives encouraging advancement of the arts and sciences while also attempting to mitigate damage incurred because of an infringement, without defining discrete copyright protection parameters, the tenuous struggle will continue and we will be left lingering in a legal limbo.

St. George is senior corporate attorney at General Dynamics Corp.'s corporate office in St. Louis.



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# SYSTEMS & SOFTWARE

## Sybase serves up a new SQL

Aims to satisfy user appetites with multiprocessor-capable SQL Server

BY JEAN S. BOZMAN  
CW STAFF

EMERYVILLE, Calif. — Sybase, Inc. filled in a competitive gap this month by announcing a version of Sybase SQL Server for symmetrical multiprocessors. Previous versions of the

Sybase software, which handles multithreaded tasks, to work properly; a previous version for Stratus Computer, Inc. machines had been expected to debut last year.

"We did try out an earlier version that was supposed to run on Stratus last year," said William

multiprocessor version for several years. Until now, he said, the product "did not share the CPU graciously with competing batch jobs or other applications. It did best when you threw the whole machine at it."

Kastner said Sybase needs Release 4.8 to boost its presence on midrange DEC VAX and Unix computers, which can be made to run in symmetrical multiprocessing (SMP) modes.

### Meeting the competition

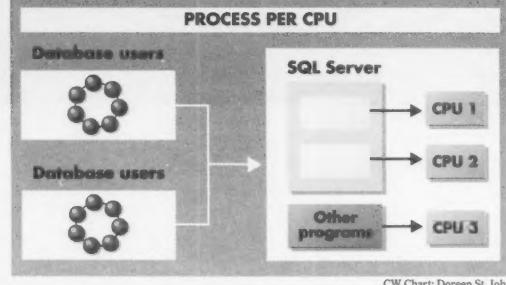
Competitive products from Oracle Corp. and the Ingres Division of Ask Computer Systems, Inc. have run on SMP machines for several years. According to Ask, Release 6.2 of Ingres supported SMP machines when it was introduced in July 1989; the Oracle database has run on SMP machines since 1988, Oracle reported.

At first, Sybase Release 4.8 will run on just three hardware platforms: DEC VAXs and Unix computers made by Pyramid Technology Corp. and Sequent Computer Systems, Inc.; it will be ported to more platforms over time. Prices for the new software package range from \$24,000 to \$192,000, depending on the type of hardware used and the number of CPUs running Sybase.

Sybase said audited TPC-B benchmark tests showed that Release 4.8 on a two-processor VAX 9000 Model 420 ran at 261 transactions per second. Independent TPC-B tests of the competing Oracle RDBMS and DEC

### Sybase virtual server architecture

Sybase, Inc. software creates a single 'virtual' database from two copies of Sybase running on separate CPUs in a multiprocessor system



CW Chart: Doreen St. John

SQL Server relational database management system could be run only on a single processor.

Release 4.8, which is being shipped to Sybase customers as a free upgrade from SQL Server 4.2, will run on multiple processors sharing memory within the same computer. A new feature, called the Sybase virtual server architecture (VSA), will allow multiple Sybase database "processes" to appear as a single process to all client applications (see chart).

Analysts said there had been a significant delay in getting the

Niemi, director of distributed applications at Fidelity Investments, Inc. in Boston, which uses Sybase on Digital Equipment Corp. VAX and Sun Microsystems, Inc. machines. Niemi said he plans to use Release 4.8 by the fall but anticipates running it on a single-processor VAX machine at first, just to compare its performance with that of the 2-year-old Release 4.0.

Peter Kastner, vice president at Aberdeen Group, a Boston market research company, said Sybase had been working on the

RDB RDBMS have both shown rates in excess of 300 transactions per second, but those tests were done on Vaxclusters made up of four multiprocessor VAX 6000 machines.

Yet another Sybase version, Release 5.0, is expected to be announced this fall, including support for many graphically ori-

ented database tools, according to users and analysts. "Release 5.0 is going to take all these different flavors of the Sybase database and make it all one flavor," said a Boston-area Sybase user. "That way, the code will be easier to maintain, especially for those who were running multiple versions of Sybase."

## Users battle price hikes with value-based software buying

BY JOHANNA AMBROSIO  
CW STAFF

Users are adopting a new method called value-based pricing to help combat the rising costs of software. In this model, users determine what they believe is the software's worth to their organization and use that as a negotiating tactic with vendors.

"We buy software based on its price and its value to us," said William Monteith, corporate director of information resources management at Armco, Inc., a specialty metals and stainless steel producer in Middletown, Ohio. "If the value is sufficient for us to pay, however it's been priced, we do so. We look for the overall return on our investment."

Armco is not alone. "There's a sophistication on the part of users," said Damian Rinaldi, an analyst at Sentry Market Research in Westboro, Mass. "They're trying to assess the value to their organizations and not just divide the number of users into the software's purchase price."

Among the factors used in determining value are the follow-

ing: How many people will use the software; what functions the software will perform and how important they are to running the business; and the size and complexity of the software. Because this value may vary from company to company, vendors need to be much more flexible in working from printed price lists than they have been in the past, users said.

### Value in vogue

Value-based pricing is coming into vogue because of rising software costs and the increased frustration of users. Keith Crawford, manager of computer operations at Deere & Co. in Moline, Ill., said that in 1983, software accounted for 3.5% of Deere's total information systems budget. This year it accounts for about 11%. Then too, he said, the price of maintenance contracts has traditionally risen by 10% or 15% per year. Last year, it was about 26%.

"It's alarming," Crawford said. "You're a captive audience, and you don't have much of an alternative. We're victims of the

*Continued on page 30*

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# The ACE gospel according to DEC

BY MARYFRAN JOHNSON  
CW STAFF

MAYNARD, Mass. — With the evangelical fervor of the new convert, Digital Equipment Corp. is grabbing every industry pulpit available these days to talk about its dedication to the Advanced Computing Environment (ACE).

As one of the lead companies in ACE, a 60-vendor alliance hoping to set a new standard for Unix-based and reduced instruction set computing (RISC) products, DEC has swiftly elevated the initiative to strategic status.

"All of the software coming out of DEC will have the ACE-compliant label," Kurt Friedrich, manager of DEC's open software group, told a gathering of analysts and press recently. "Everything we sell, we will try to push on the ACE platform. That is clearly our direction."

Friedrich summed up DEC's view of what ACE will provide to users succinctly and optimistically: "Lots of hardware. Lots of software. Lots of companies. And distribution channels up the wazoo."

During the next year, a few of the developments customers will see from DEC on the ACE front include the following:

- A new class of RISC servers from DEC, more powerful price/performers than the current Decsystem 5500 and Decstation 5000. The new systems will be equipped with Turbochannel

buses, complying with the ACE hardware standards.

- Increasing numbers of tools and features for Ultrix that are already present in VMS, such as distributed management capabilities. Later this year, for example, DEC will introduce its Decmedia set of tools for digital

networking expertise and produce layered software products to enhance and extend the initial ACE operating system from SCO.

DEC plans to produce a slew of such products, including device drivers, real-time capabilities, graphics packages, multi-

## Being pushed aside?

*Facing a projected loss in market share, DEC is banking on the Advanced Computing Environment project to offset growth by Sun Microsystems, Inc., IBM and Hewlett-Packard Co. in the desktop RISC market*

	1990		1991	
	Units/Market share		Units/Market share	
<b>Sun</b>	<b>123,889</b>	<b>55.4%</b>	<b>187,094</b>	<b>51%</b>
<b>IBM</b>	<b>23,618</b>	<b>10.6%</b>	<b>63,914</b>	<b>17.4%</b>
<b>HP</b>	<b>6,160</b>	<b>2.8%</b>	<b>40,660</b>	<b>11.1%</b>
<b>DEC</b>	<b>25,713</b>	<b>11.5%</b>	<b>30,190</b>	<b>8.2%</b>
<b>Other</b>	<b>44,081</b>	<b>19.7%</b>	<b>45,128</b>	<b>12.3%</b>

Source: Computer Intelligence/Infocorp

CW Chart: Janell Genowese

multimedia applications development on its Unix-based workstations.

- A late 1991 shipping date for the initial ACE operating system, which will be the Santa Cruz Operation's (SCO) Open Desktop integrated with DEC's Ultrix and the Open Software Foundation's OSF/1.

To make money on the hardware end, DEC will concentrate on building high-end workstations and servers, leaving the low end to vendors such as Compaq Computer Corp. In software, DEC will push its

media software and PC integration.

"We have two advantages: our size and support capabilities and our strong focus on distributed networking," Friedrich said. "The big 'if' is whether the industry will go for it."

Indeed, this "all-for-one" Musketeer alliance business is bound to generate some pitched market battles as companies with similar products pursue the same customers.

"Something running on SCO Unix from DEC has to run on all ACE systems, but if somebody

else's Pathworks or C++ is the best version, that's what people will buy," Friedrich acknowledged. "There will be some skirmishes, but hopefully we will all settle into more profitable modes. The advantage of ACE is that a lot of us will quit losing money on Unix."

The ACE members recently received the 150-page Advanced RISC Computing (ARC) specification, which defines minimum hardware standards to ensure that shrink-wrapped applications will run on ARC-compliant systems.

One key feature that is supposed to give ACE members the flexibility to innovate — in other words, make money — with ARC-compliant systems is the combination of a hardware abstraction layer and device drivers. Those software layers lie between the operating systems and the hardware itself, giving systems vendors a much-needed place to "add value" while preserving binary compatibility for applications and operating systems.

Software developers will have the choice of writing source code to SCO's Open Desktop or to Microsoft Corp.'s New Technology operating system.

"ACE adds credibility to DEC's open system strategy — credibility they didn't have before," said Peter Schay, an analyst at Gartner Group, Inc. in Stamford, Conn. "There is a big upside potential for them with ACE."

Meeting that potential, analysts said, is highly dependent on

time to market with real ACE products — not just current-model Decstations slapped with an ACE label.

"What will dictate the winner is who sells the most out there," said David Evancha, an analyst at Workgroup Technologies, Inc. in Hampton, N.H.

## ACE basics

The Advanced Computing Environment (ACE).

**Who:** 60 vendor companies led by DEC, Compaq, Microsoft, SCO and Mips Computer Systems, Inc.

**What:** An attempt to establish a standards-based computing environment based on two hardware platforms and two operating systems — and derail Sparc, the market-leading RISC chip from Sun Microsystems, Inc.

**Which:** The hardware platform is based on the RISC chip from Mips and Intel Corp.'s 80386- and i486-based systems.

The ACE operating systems are SCO's Unix-based Open Desktop and Microsoft's OS/2 Version 3, also called the New Technology or NT.

# JPL's downsizing initiative raises data integrity issues

## ON SITE

BY JEAN S. BOZMAN  
CW STAFF

PASADENA, Calif. — Downsizing has taken hold here at the Jet Propulsion Laboratories (JPL), an earthly outpost for interplanetary communications that historically has handled most of its data processing on mainframes.

Huge volumes of digitized space data have to be analyzed following their capture by large earthstations around the globe.

During the Voyager probe's 1980s encounters with Jupiter and Saturn, for example, data was captured in real time by Sperry Corp. mainframes and then sent to an IBM mainframe for additional processing.

Future missions, though, will allow scientists to analyze space-probe data at their own workstations in the U.S. and Europe.

A decentralized data network, anchored at JPL, will provide a directory of available data files — and let scientists down-

load the stored data to their desktop machines. At the same time, JPL is going to be weeding out some mainframes that may have outlived their usefulness, including two older Unisys Corp. machines.

"We're going to evolve into a computational facility that can do the calculations that people can't do on their local machines," said Haskell O'Brien, manager of communications, computing and network services at JPL's Pasadena data center.

JPL's data network is expanding, but the data administration rules that govern this data center are going to be extended to end-user departments.

"Client/server computing is going to have to deal with the issues of who owns that data and who is going to take responsibility for that data," O'Brien said. Archiving the data is critical, he said, especially now that copies of that data are lost through improper backup and recovery procedures at scientists' offices.

As client/server computing



JPL captures huge volumes of space data for analysis, soon to be accomplished on its client/server system

takes hold at JPL, scientists must take the initiative for data integrity at their own offices. "For the [mid-1990s] Mars Observer mission, there will be a central catalog that describes each of the data files, and scientists can use the Internet to log in from their home institutions," said Charles Acton, task manager at the Navigation Ancillary Information Facility, which sends spacecraft telemetry data to scientists.

In the past, JPL's information systems staff took all responsibility for data integrity and network security, O'Brien said. An operations staff of more than 75 maintains several IBM mainframes here.

The vast majority of processing jobs were run within the four walls of the 30,000-sq-ft data center at JPL, a National Aeronautics and Space Administration facility operated by the California Institute of Technology.

The data center here serves an estimated 8,000 end users.

The data center still serves as the driver of this planetary data — housing more than one terabyte of data on more than 100,000 IBM-compatible tape reels and scores of disk drives. The large machines that manipulate JPL's data are still available for off-line analysis. They include a Cray Research, Inc. Y-MP — an X-MP was replaced during the July 4 weekend — two Unisys Corp. 1100/91 mainframes and two IBM mainframes, a Model 150 and a Model 200J.

As local-area networks spread across the 177-acre JPL campus of more than 150 buildings, the data network will become the focus of research here, providing access to a central repository of JPL data files.

In the last three years alone, 80 LANs have sprung up, all attached to the lab's backbone 5M bit/sec. Institutional Local Area Network. The building blocks of JPL's expanding digital network, which extends to scores of universities and to dozens of countries, are the Internet's Transmission Control Protocol/Internet Protocol and the Digital Equipment Corp. Decnet protocols, Acton said.

## Value-based

CONTINUED FROM PAGE 27

situation," Crawford said, however, that he is willing to pay a bit more for higher quality products. "BMC [Software, Inc.]'s software is very expensive, but it's very good. We have alternatives we could use, but we go with the best because it gives us the fewest problems."

One big reason behind the perplexities in software pricing is history. "The true costs of software development are not reflected in software prices," said Peter Burris, a senior analyst at International Data Corp. in Framingham, Mass. "That has led to some really weird economies in the computer industry, for both custom-

ers and vendors."

Hardware suppliers used to essentially give software away, using the profits from hardware sales to offset costs. But as hardware prices continued to drop and vendors needed to derive more of their profits from software, a new pricing model was needed. IBM attempted to address this in October 1986 when it announced tiered pricing, which other vendors have followed.

### Fast pace

Complicating the software scenario is the rapidly changing pace of technology. Innovations such as client/server computing, cooperative processing and increasingly powerful workstations have caused both users and vendors to rethink how

software is priced.

In addition to value-based pricing, customers are also working to negotiate up front to avoid some problems altogether. "The time to protect yourself is at the time of initial purchase," said Frank Kassel, director of information services at Deer Park Spring Water, Inc. in Carlstadt, N.J. He said his company recently signed a \$1 million turnkey software deal and won concessions from the vendor on price protection and other "reasonable guarantees."

Another helping hand may be lent by technology to help manage the whole process. Systems will increasingly be able to track how many people are using the package and which parts of the software are activated.

One thing that may happen fairly soon is an increase in the number of processor categories used for the tiered pricing scheme, according to Bob Djurdjevic, president of Annex Research based in Phoenix.

"We need to go from eight to 80" categories, Djurdjevic said. "But that's really beating the wrong horse because it does not address the benefit that the software delivers to the customer."

Djurdjevic said he expects that, over the long term, users and vendors will get together to negotiate value- or benefit-based software pricing. "The discussion is no longer about whether to do it but how to relate price to value in a way that is fair to both customers and vendors," he said.

## Problem prices

Tiered pricing continues to be the leading culprit on users' software pricing hit lists, with site licenses for personal computer packages close behind.

Basing the price of the software on the size of the processor it runs on is "kind of a rip-off," said A. Floyd Griggs, executive vice president of information systems at SigNet Bank in Richmond, Va. "It requires no added work by the vendors. It's just a fee you've got to pay."

But, users said, they do not necessarily want to see tiered pricing abolished altogether. William Monteith, corporate director of information resources management at Armco in Middletown, Ohio, said that when a limited number of people are using an application, per-user pricing may be called for. But for applications in which many people are using the software, tiered pricing seems fair.

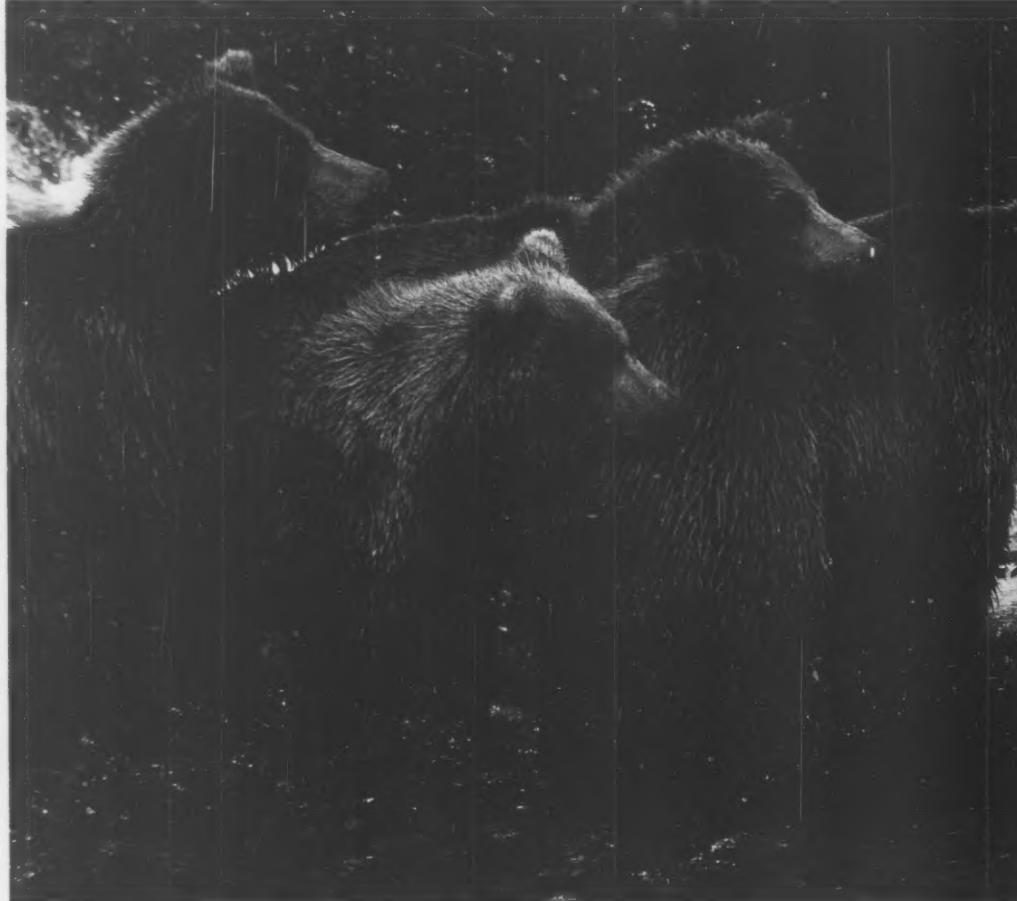
"I can think of two cases where we've used an oversized processor for a particular job because of a high level of performance needed," Monteith said. "As a result, we've had to pay a terrific penalty. In other cases — applications with hundreds of users — tiered pricing seems fine."

The debate over site licenses for PC software is "a key issue for us," said Roger Bast, director of MIS for the Gases Group at Air Products and Chemicals, Inc. in Allentown, Pa. "We have 3,500 PCs, and it's a challenge for us to manage purchasing, distributing and keeping track of software for all of them. As PCs become more ingrained and software prices become a bigger percentage of the total, it becomes more difficult."

He said that the centralized IS group has traditionally managed the software-acquisition process but that the time is ripe to do some end-user education as well. "They have to be aware of how to buy; it's not just an MIS function."

JOHANNA AMBROSIO

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# Film company rolls along without mainframe

*With a little ingenuity, Courtaulds successfully navigates the transition to Unix system*

BY JOHANNA AMBROSIO  
CW STAFF

A year ago this month, Courtaulds Performance Films pulled the plug on its mainframe, ditched all its applications and switched to a Unix computer. The company has no regrets.

"We're very pleased," said Wesley Reinhold, corporate information technology manager at the Fielddale, Va.-based firm. "Information is now consistent throughout the company, we've got an integrated application, and we're doing

some things we couldn't do before."

On the other hand, he said, Unix is not as robust as the proprietary Unisys Corp. operating system it replaced. "You gain a lot, but you also give up some things," he said.

Courtaulds Performance Films, a subsidiary of London-based Courtaulds PLC, manufactures tinting and other types of films used for windows and high-technology applications. The parent, which is traded on the London Stock Exchange, reported revenue of \$3.2 billion for its 1991 fiscal year ended March 31, 1991.

The Performance Films subsidiary, with some 630 employees, contributed about 3% of the total 1991 revenue.

#### Expansion throughout the U.S.

Courtaulds began acquiring U.S. firms in the performance films industry in June 1987, with Martin Processing, Inc. being the first completed deal. That company is now the Fielddale headquarters for Performance Films. Other offices — the results of additional acquisitions — are in Los Angeles, Phoenix and Chicago, among others. Three manufacturing

plants are in Virginia.

"When I first came here from the parent in 1987, I saw that the existing Unisys 1100 mainframe was old, and the applications were not integrated," said Paul Jennings, vice president of finance. All the software for financial, manufacturing and other applications had been written in-house. The mainframe had been installed in 1982.

"We started looking at what we'd really need to support the business," Jennings said. "Coming from the parent, I knew that we'd be looking for other selected acquisitions, so whatever we got would need to support that growth."

The primary requirement included a packaged application that would support all facets of the business, including manu-

**I**NFORMATION IS NOW consistent throughout the company, we've got an integrated application, and we're doing some things we couldn't do before."

WESLEY REINHOLD  
COURTAULDS

facturing process control, payroll and personnel. Another requirement was that all the functions be integrated "so if you updated one part of the program, it would be reflected in the other parts," Jennings said.

In late 1988, Courtaulds selected a Unisys 6000/80 and Datalogix Formula Systems, Inc.'s Cimpro as its primary business application. "We found the package first, and it happened to run under Unix," Reinhold said. The company also uses a Unisys office automation package for electronic mail and other functions.

The new gear was installed by mid-1989, but Jennings said that Courtaulds ran both the new and old systems in parallel for about a year, until the last piece of the new application was installed on the Unix network. Now, he said, "There's nothing left of the old system; it's been removed."

The Unisys Unix computers support about 100 people, including local and remote users. Those in far-flung locations are connected to the Fielddale headquarters via X.25 lines. By the end of the year, some 50 to 100 more users — in locations including Chicago — will be linked, Reinhold said. Longer term, he said, the company will hook up some of its overseas offices, including those in Spain, Germany and the UK, into the domestic network.

In addition to the Unix box are about 50 personal computers, which run both MS-DOS and Xenix. Some of the PCs are used to download information into an executive information system written in-house. That system is used daily by Courtaulds vice presidents and chairman, Jennings said. Data is presented in a graphical format. Other PCs are used for "basic PC applications," including Lotus Development Corp.'s Symphony and Software Publishing Corp.'s Harvard Graphics, he said.

Looking back, Reinhold said, "We literally got rid of everything and started over again. Things are just now starting to settle down, but it was worth it. It just takes some ingenuity."



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# Democrats' database system meets needs of novice users

## ON SITE

BY GARY H. ANTHES  
CW STAFF

WASHINGTON, D.C. — The Democratic Senatorial Campaign Committee (DSCC) is staffed by people who typically have political campaign experience but little exposure to computer technology. Nevertheless, their jobs require constant use of computers.

Information systems at DSCC have to match technology to novice users and adapt to the reality that the committee's mission of helping elect and re-elect Democrats to the U.S. Senate ebbs and flows in two-year cycles. The election cycle produces a personnel turnover rate of 50% to 90% every two years.

The DSCC conducts fund-raising events, campaign research and media relations. Like most Washington organizations, it is awash in information — data on donors, contributions, voting records, political events and the media. The data resides in Sybase, Inc. databases on a local-area network driven by two Digital Equipment Corp. Microvax 3800s running VMS.

The 40-odd users of the donor database do not see Sybase directly, nor do they use canned applications put together for them by the DSCC's computer staff. Instead they use Natural Language, a reasoning-based database interface from Natural Language, Inc. in Berkeley, Calif.

Users enter free-form, plain English queries. Those get translated to SQL requests, which retrieve information from the database. The results are then translated back into plain English.

DSCC systems administrator Tim Nelson typed in, "List donors who gave more than \$500 last year." A list of donors appeared. Next, he typed, "Compare labor and corporate donors." The system, remembering the context of the previous question, displayed tabular data comparing the number and amounts of donations — exceeding \$500 — from labor unions and companies last year. Nelson selected an entry from a menu and got the same comparison in the form of a pie chart.

"We used to get requests for things like that on paper slips. It might take someone two days to do the programming and get the results back," Nelson said.

He said DSCC's goal is to have a system so simple and intuitive that a computer novice can glance through the user's manual and be able to do useful work on the computer in 10 to 15 minutes. A neophyte can simply type in, "What can I ask?" and get back a list of questions. All that is needed to be proficient on the system is a knowledge of what data is available in the database, Nelson said.

Most of the queries against the donor database came back within a few seconds. Some took much longer. "Sometimes the SQL written by Natural Language is not that efficient," Nelson said.

Natural Language software contains its own database of some 100,000 words and concepts. Between the donor database and Natural Language is something called a Connection File, which holds synonyms, definitions and relationships

unique to the user's data and applications.

Considerable skill and care is needed to set up the Connection File, Nelson said. Natural Language did that work for DSCC initially in a five-week effort. DSCC is in the process now of overhauling and expanding the Connection File to link up with media and political databases.

DSCC paid about \$40,000 for a CPU license for Natural Language and another \$10,000 for training, setup and a customized user manual.

## Natural intuition

"I'd always been told that one day we could just ask a computer questions and get answers," said DSCC fund-raising specialist Shari Lynn Crawford. "That's what Natural Language does."

But use of Natural Language requires more than intuition; users must still learn acceptable phrases such as "show me" and "give me," Crawford said.

Sometimes it falls short of expectations. It balked at Nelson's typo, "California," something most good spell checkers would guess meant "California."

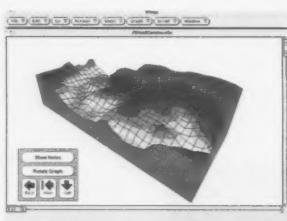
When Nelson asked, "What do you know about Jay Rockefeller?" it said it did not know anything about him. He later found four Rockefellers in the database, including John D. Rockefeller IV with an "alias" of "Jay."

According to DSCC director of information services Jeff Ferguson, such limitations can be remedied by putting more rules in the Connection File.

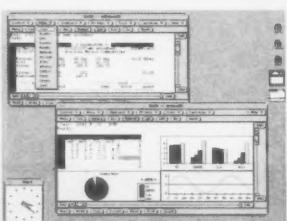
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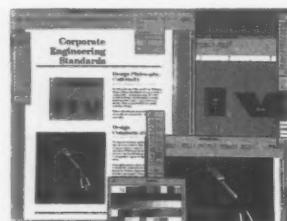
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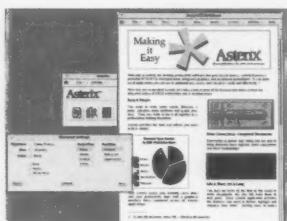
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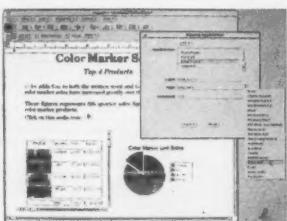
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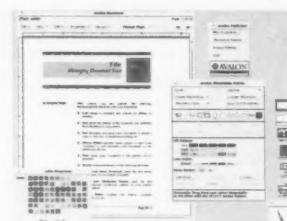
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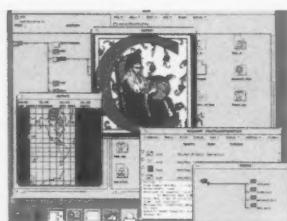
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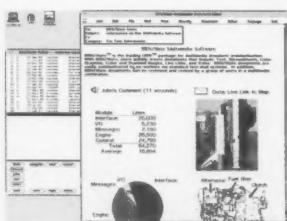
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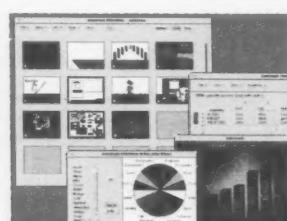
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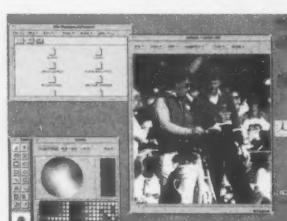
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BBN Software Products Corp.



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DUX Software Corp.



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## Robo crew takes a crack at Evanston potholes

BY ELLIS BOOKER  
CW STAFF

EVANSTON, Ill. — You've seen RoboCop 1 and RoboCop 2. Now watch for a four-wheeled enforcer that uses computers, robotics and vision technology to sweep the streets clean of... potholes?

The pothole-repair apparatus is being developed by Northwestern University's industrial research laboratory and the Evanston Research Park, which together won the \$1.1 million contract from the federally funded Strategic Highway Research Program last December.

Arizona-based Crafco, Inc., a pave-

ment repairs equipment manufacturer, is supplying components for the prototype — due to be on the road a year from now — and will market the \$200,000 to \$250,000 system if it proves workable.

The developers believe their invention will make repairs at one-sixth the cost of traditional methods and will be capable of 50 repair jobs a day, compared with the eight to 10 jobs of a seven-person crew.

The fully realized contraption will feature a machine-vision-controlled cutter/scraper and a powerful vacuum to remove debris. A second vision system will determine the depth and dimensions of the hole before a robot-controlled spray gun

shoots a calculated amount of heated patching material into the pothole.

All of the sensors will feed into the control system, which is currently being designed to use two Intel Corp.-based i486 personal computers for the operator interface. It will also use vision systems and a supervisory computer based on a real-time Unix server from Motorola, Inc.

The computers on board the pothole repair vehicle will be industrially hardened to enable them to withstand the rigors of the road, according to Richard N. Johnson, a research scientist and group leader for sensing and controls at the research laboratory.

## NEW DEALS NATO picks Groupe Bull

Groupe Bull recently scored some major victories in the international arena, with contracts awarded in both Europe and the Far East.

NATO has chosen Groupe Bull as the supplier of its integrated office information system for the alliance's headquarters in Brussels. The \$8 million contract calls for the installation of several Bull DPX/2 servers and between 300 and 400 Zenith Data System workstations.

The system will handle all network communications, and it will include database, document retrieval and electronic messaging software.

Responsibility for the project has been assigned to Groupe Bull's subsidiary in Belgium, which will work in conjunction with Bull's subsidiaries in the UK, Germany, North America and Italy. Bull reportedly bid against ICL, Inc. for the contract.

**Korea Telecommunications** recently purchased two mainframe computers from Bull HN Information Systems, Inc. The systems are valued at \$2.7 million and will be installed at the Korean telecommunications company's main electronic data processing center in Seoul, South Korea.

The new DPS 8000 systems will be used for general administrative applications, including payroll, accounting, materials management and human resources management.

The sale was completed by Goldstar Co. Ltd. under the terms of a recently signed, multiyear distribution agreement with Bull that encompasses domestic Korean market activities.

In the People's Republic of China, Bull HN Information Systems will be a supplier of hotel management systems to the hospitality industry. The company has contracted to sell a complete hardware and software package that will integrate all hotel functions into a single information environment.

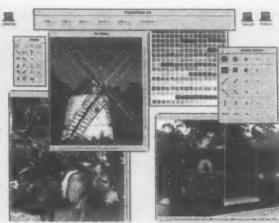
**The Peoples Natural Gas Co.**, headquartered in Pittsburgh, has signed a \$1.1 million licensing agreement with Dun & Bradstreet Software, a subsidiary of The Dun & Bradstreet Corp.

The utility company will be using D&B's general ledger (G/L) package that operates with IBM's DB2 relational database management software.

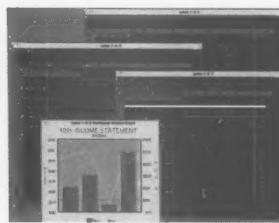
In addition to the G/L program, Peoples Natural Gas also licensed D&B's fixed assets and capital projects packages. The software will be used to design and implement a new management accounting system.



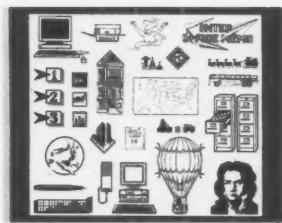
dBASE IV  
Ashton-Tate



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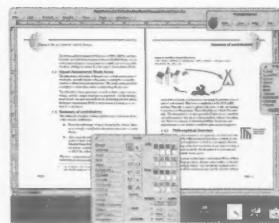
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## NEW PRODUCTS — SOFTWARE

## Development tools

GT Software, Inc. has announced availability of Comport 3.0, an enhanced version of its Cobol/CICS program generation software tools.

Comport 3.0 allows programmers to read data into varying program types from five different data files. Once a record has been defined in a Comport-generated program, it can be reused in other programs. Users can also control error message line placement within generated code.

Pricing ranges from \$16,000 to \$50,000, depending on processor group

and operating system. A workstation version is also available.

**GT Software**  
1111 Cambridge Sq.  
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Parameter Driven Software, Inc. has released Unix and Xenix versions of PDS-C Source Generator.

The development tool translates programs written in fourth-generation languages (4GL) into C language code. New releases of PDS-C run under Unix and The Santa Cruz Operation's Xenix. According to the company, C language versions produced by the product have signif-

icantly lower runtimes than the 4GL versions but retain the advantages of 4GL development.

The product costs \$3,000 to \$45,000 depending on platform. An additional user access fee is required.

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uses multitasking when possible to optimize loading performance. A Fast Unload product will also be developed.

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(708) 620-5000

Serena International has begun shipping Version 2.1.1 of Syncrac, an environment synchronization utility for the MVS operating system.

Syncrac coordinates multiple software environments and tracks changes in data sets, file groups and storage volumes. The product tracks changes systemwide and also synchronizes backup or discovery recovery site and primary site operations.

Pricing ranges from \$15,708 to \$29,172 for a single processor. A site license costs from \$18,480 to \$34,320.

**Serena International**  
2nd Floor  
500 Airport Blvd.  
Burlingame, Calif. 94011  
(415) 696-1800

## HARDWARE

## Data storage

EMC Corp. has created a 20G-byte 8mm tape backup system for IBM Application System/400 B and D model computers.

The Champion Tape Subsystem uses a 4M-byte cache to increase data input speed. Capacities from 5G to 20G bytes are available. The system appears as one tape unit to the processor, regardless of tape drive configuration.

Pricing ranges from \$16,500 to \$53,500.

**EMC**  
171 South St.  
Hopkinton, Mass. 01748  
(508) 435-1000

Standard Memories Corp., a unit of Wespac Technologies Corp., has introduced memory expansion kits for the Digital Equipment Corp. Decstation 5000 Models 120 and 125.

The Pincomm 512S kit provides increases in increments of 4M bytes, with a maximum potential system memory of 32M bytes. The Pincomm 512SX version offers increments of 16M bytes, raising system memory to a maximum of 128M bytes.

The 512S costs \$545, and the 512SX costs \$2,660. A lifetime warranty is included with 24-hour turnaround replacement service.

**Standard Memories**  
9 Watney  
Irvine, Calif. 92718  
(714) 583-7500

Cambex Corp. has announced two 8mm streaming tape storage systems for the IBM RISC System/6000 platform.

The Cambex Certainty 6800-80 offers 2.5G bytes of storage per tape, and the 6800-90 model provides 5G-byte capacity. A small computer systems interface cable is included with each system.

The 6800-80 is priced at \$5,750, while the 6800-90 costs \$9,950.

**Cambex**  
360 Second Ave.  
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# PCs & WORKSTATIONS

## COMMENTARY

Patricia Keefe

## Lotus: Bases are covered



Never let 'em see you sweat. Frank King, senior vice president of the Lotus Software Business Group, made it quite clear last week that Lotus isn't revamping its database strategy now that Dbase and Paradox are siblings.

"Lotus wants to participate in all markets. But we don't need a database engine of our own. That's based on our belief that client/server is the way to go. We have an excellent server of our own via Sybase," he said. Lotus will continue to extend its DataLens technology and "will look in-house at how we can provide database front-end tools," King added.

King once again denied any interest in extending Lotus' minority stake in Sybase. "We have no intention of going beyond our current ownership [level]." He also dismissed reports that Lotus executives have been spending time at DataEase, a small player in the database market. "We have nothing to say about them [DataEase]. There is nothing going on, and we have no intent to buy anything." That about covers those bases.

Now, on the applications  
*Continued on page 42*

## ANALYSIS

BY JAMES DALY  
CW STAFF

Borland International, Inc.'s recent acquisition of Ashton-Tate Corp. has drawn sharp focus on what promises to be the next major battleground in Microsoft Corp. Windows 3.0-based applications: the still-unclaimed database market.

Since Windows 3.0 arrived in May 1990, nearly every conceivable type of application has been released for it. Not so with databases, however. Although smaller firms such as Precision Software, Inc. have introduced limited offerings like Superbase 4, the complexity of writing a sophisticated product for a revamped interface has delayed larger firms from weighing in.

Those introductions are expected to begin in earnest by the

end of the year, and analysts expect a donnybrook. "The Windows database world is open territory — the turf is there for anyone to own," said David Bayler, an analyst at Montgomery Securities in San Francisco.

Among those readying products are the following:

- Borland's Chairman Philippe Kahn has attempted to grab the mental high ground by demonstrating Paradox for Windows to anyone who asks. Kahn's run-through highlights several major additions, including a new database engine architecture that allows applications to share data by snapping into a common "object layer." Such data exchange now requires traversing the Paradox database engine. The new design will also allow users to directly access SQL Link, a Paradox Version 3.5 companion product that allows users to access remote SQL data without

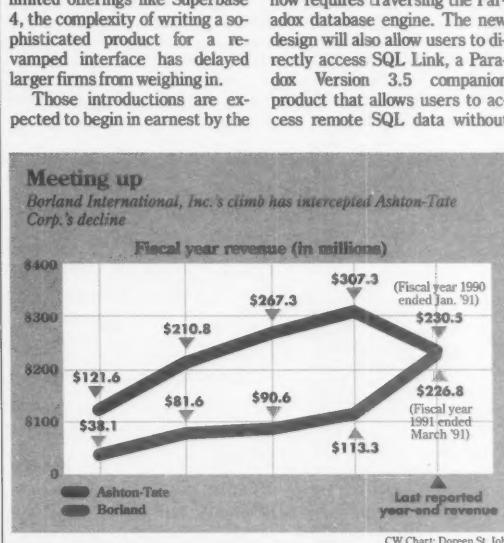
learning complex SQL programming. The product is expected by December.

- Only hours after inking the letter of intent that snared him Ashton-Tate, Kahn also promised to deliver a Dbase IV for Windows. After that, the future of Dbase IV remains hazy, al-

though it is likely that Borland will try to merge the product with Paradox. Dbase IV for Windows is expected by the end of the year, but Ashton-Tate has a history of missed deadlines and sloppy delivery schedules.

- Fox Software, Inc. hopes to follow up on the gains it has made against Dbase with a Windows version of Foxbase sometime in early 1992, said President Dave

*Continued on page 39*



## IBM, Intel, Dell announce benchmark group formation

BY CHRISTOPHER LINDQUIST  
CW STAFF

SANTA CLARA, Calif. — IBM, Intel Corp., NCR Corp. and Dell Computer Corp. this month announced the creation of a new organization dedicated to producing performance benchmarks for personal computer hardware.

The Business Applications Performance Corp. (BAPC) said it will develop a set of real-world benchmarks based on commonly used applications and standard operating systems. Analysts and users expressed hope and concern over whether the coalition will be able to create benchmarks truly capable of measuring the wide variety of PC hardware currently available.

"Up to now, there have been some fairly good independent guys who've been out there putting together these benchmarks," said Timothy Bajarin, an analyst at Creative Strategies Research International, Inc. "But there are just so many con-

fusing approaches to communicating power, performance and such, that this type of a consortium is real interesting."

Peter Kastner, a vice president at Aberdeen Group, said that the benchmarks would also help users by making them feel a need to keep up with the pace of technology "by putting pressure on the suppliers to bring their benchmarks up to snuff."

The benchmarks will reportedly allow evaluations based on "realistic work loads" in common operating environments. Those environments will include the following:

- Stand-alone, single-tasking PCs running applications under DOS, Microsoft Corp.'s Windows and OS/2.
- Stand-alone, multitasking PCs running OS/2- and Windows-compatible applications.
- PC networks under such operating systems as Novell, Inc. Netware and Microsoft's LAN Manager.

BAPC membership is open to any interested organization.

## AUGUST 1991

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				1	2	3
4	5	6	7	8	9	10
		Arlington, VA		Indianapolis, IN		
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		New York, NY				
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Roger A. Peterson  
Director of Information Systems  
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“It gives me a reading on what real people are doing out there...so I know if I'm onto something that's leading edge and that has proven business applications.

“When I get *Computerworld*, I don't just let it sit. I open it up and scan the table of contents to quickly find the articles I want to read. And sometimes I'll flag a story I know somebody else on the staff will be interested in, attach a little post-it note, and send it on.

“I think *Computerworld* is one of the more recognized industry magazines, which means that it automatically draws from a more qualified base of writers and analysts. They've got quality and depth in the entire breadth of areas they cover...from PC to mainframe. It's well written, it's authoritative, and it offers a considerable degree of technical knowledge.

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**COMPUTERWORLD**

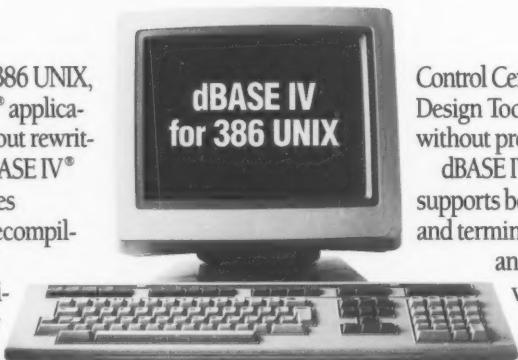
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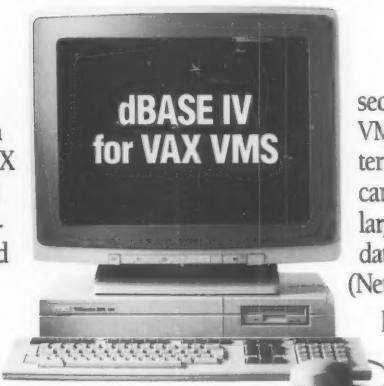
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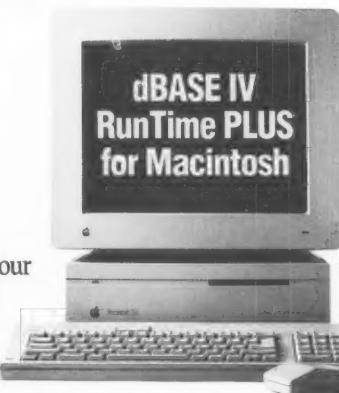
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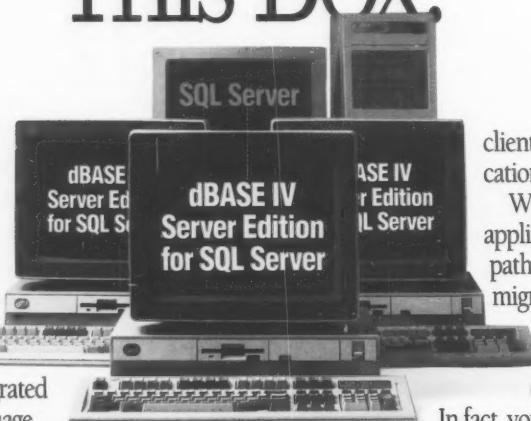
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# Upgrading option not always an easy one

## ANALYSIS

BY MICHAEL FITZGERALD  
CW STAFF

What do minor surgery and a personal computer upgrade have in common? Each inflicts about the same amount of pain and agony on the victim.

In recent months, though, several board makers have introduced easier paths for users to do their own upgrades, at least from Intel Corp.'s 80286 chip to its 80386SX. Intel, Cumulus Corp., a board and PC clone maker based in Cleveland, Kingston Technology Corp. in Fountain Valley, Calif., and Waltham, Mass.-based Aox, Inc. all make "plug-and-play" processor upgrades.

However, analysts said they did not see a large demand for

such upgrades.

"It's a stopgap measure," said Will Fastie, editor of "The Fastie Report" in Baltimore. "You aren't getting what you would've gotten with an in-board card, but you will get a modest boost in performance, and you do get the 386 architecture."

Fastie said users should probably expect a 50% performance gain with a product such as Intel's Snapin-386. He suggested users view snap-in processor upgrades as a way to buy time if what they really wanted were 1486 machines, or if they thought the 80386 market was heading for a shakeout.

Added Richard Zwetchkenbaum, senior PC analyst at International Data Corp. in Framingham, Mass., "I question how many they'll sell. How many companies are going to go out

and spend money to upgrade [their 286s], given that they're maybe at the end of their life anyway? It's not just a lay-down

buy new machines, rather than go through an upgrade process. But at Security Pacific National Bank, where approximately one-third of the PCs are 80286s, the company is examining its upgrade options so it can inexpensively give users better memory management and the ability to run Microsoft Corp.'s Windows.

"Products we've seen before are relatively complicated to install, and we had problems with compatibility when we've installed them," said Andrew Garsten, a systems support professional at Security Pacific. Garsten said the firm was looking at Intel's Snapin-386 module, Kingston's SX/Now and

Express 386 from Sota Technology, Inc. in Sunnyvale, Calif.

Garsten said the bank wants to replace its 8086s with 80386 machines but wants to give 80286 users the capabilities of the 80386 without having to pay what new machines cost. Processor upgrade options from the firms Security Pacific is considering list for \$495 or \$695, while prices for a 386SX/20-MHz machine from its vendors range from \$3,000 to \$5,100.

Installing the new processor upgrades takes about 15 minutes, manufacturers said. The PC must be opened, the microprocessor located and pulled out and the upgrade board plugged into the space.

Analysts said users should be wary for performance reasons of purchasing an upgrade that does not include cache memory. Cumulus, which does not offer cache memory with its upgrade, said cache can create software compatibility problems.

## Torn between two options

*The large installed base of older-technology PCs represents both an attractive upgrade lure and an indication that many users are content with their current systems*

	U.S. installed base (in millions)	1990	1991*
<b>8086</b>	14.6	13.1	
<b>80286</b>	15.5	17.7	
<b>80386SX</b>	2.6	6.0	
<b>80386</b>	4.2	6.2	
<i>*Projected</i>			

CW Chart: Janell Genovese

kind of thing, where everybody's going to be doing it."

Most 80286 users contacted agreed they would probably just

## AIX users wary after IBM/Apple agreement

BY PATRICIA KEEFE  
CW STAFF

AIX users, who may have the most to gain from the fledgling alliance of IBM and Apple Computer, Inc. are asking more questions than their OS/2 counterparts.

Overall, AIX users appear pleased with the prospect of IBM working with Apple on an enhanced version of AIX. However, this partnership, which for some constitutes the ultimate in strange bedfellows, has some AIX users a little on edge.

Looking beyond promises from IBM and Apple to produce an enhanced AIX common to

both platforms, these users are asking some tough questions about the impact of plans for a jointly developed object-oriented operating system.

For starters, Brian Johnson, a spokesman for the Washington, D.C.-based AIX Users Group, said his members want to know if the partnership's plans to build an object-oriented operating system are going to replace AIX.

"This alliance is nothing more than a guarantee that we have the best and most responsive solution in focus and intensity on AIX, the RS/6000 and OS/2," said Joseph Guglielmi, general manager of marketing business development for IBM's Personal

Systems business.

This brings up the question of binary compatibility between AIX and the new environment. "There's not a lot of shrink-wrapped [AIX] applications," Johnson said, noting that most users have a lot invested in custom-built programs.

### No more AIX?

The object-oriented software will indeed replace AIX. At a recent press briefing, IBM officials said it was too early to tell if binary compatibility between the two operating systems would be an issue, but they did promise to slowly migrate users to the new object-oriented platform by integrating pieces of object-oriented technology into AIX over time.

An object-oriented environment would be "spectacular," but it would also mean a new standard, said Russell Silverman, a quantitative-modeling an-

alyst at Metropolitan Life Insurance Co. Noting that Unix "has finally standardized to a large extent," he said Unix users would probably resist migration unless IBM finds some way to encompass Unix within the object-oriented environment. "A lot of people will want some level of backward compatibility."

On the other hand, users said they would welcome the Macintosh interface with open arms. They are also excited about the prospect of Apple-manufactured reduced instruction set computing (RISC) machines.

"The need for a graphical interface for Unix, is of course, very great," Silverman said. Several Unix interface standards are available, but they all — "particularly Motif" — require a lot of upfront programming to be user-friendly, he said. Silverman said he does not expect to have that problem with the "to-

tally icon-driven" Macintosh interface.

"The current AIX user interface is a better job than they have done in the past, but they still have a long way to go," said Nancy Costa, application support manager for the Scientific and Engineering Systems Group at J. M. Huber in Edison, N.J. She added that the Macintosh interface would "certainly" be an improvement.

Silverman noted that Apple does a better job of releasing and maintaining operating system software but conceded that the question of whether AIX would get better or worse with an Apple alliance is very up in the air.

Also intrigued by the prospect of using the Macintosh interface is Edward O'Brien, MIS director for the city of White Plains, N.Y. He also indicated an interest in Apple's forthcoming RISC machines.

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SPF/2 takes advantage of OS/2's powerful features. It uses virtual memory to handle very large files. In addition, HPFS (High Performance File System) long file names are supported. And SPF/2 uses OS/2's REXX for its macro language—75 mainframe-compatible ISREDIT edit sub-commands provide the interface.

SPF/2's 3270 compatibility also contributes to your ease-of-use on the PC. SPF/2 processes keystrokes in the

same way as the OS/2 Extended Edition 3270 emulator, including NEW-LINE and ENTER. SPF/2 even displays the same status indicators.

SPF/2 has features not available on the mainframe. For example, SPF/2 supports 48 PF keys, automatically adapts to the various OS/2 video modes (full-screen or text-window), and scrolls the file as you move the cursor. In addition, SPF/2 has virtually instantaneous response time,

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## PC-based support tool helps decision makers

BY KIM S. NASH  
CW STAFF

He knew he would have to dish out the dollars, but on which fax technology: a fax machine, board or service? Jim Barnes contemplated the question for several weeks before handing the problem over to his IBM Personal Computer XT clone.

The answer — a fax board — came quickly after he plugged variables into Decision/Decisions, a PC-based decision support package from Dalton Dialogic, Inc. in Toronto.

Barnes, editor of *Canadian Machinery & Metalworking*, a Toronto-based magazine for makers of metal products, first stated his objective — "to find a faxing technology." He then outlined a more specific goal: "to decide on an effective way of faxing documents that fits my budget and has enough functionality to handle my work load."

The next levels of the program's seven-step problem-solving method led Barnes down a path where he plotted in trade-

offs and the package analyzed his priorities, measuring possible solutions entered by Barnes against criteria he deemed im-

portant, such as convenience, price and versatility.

Like other decision-support packages in a market, which Branum Consulting Group, Inc. in Ottawa estimated has grown at annual rates of 25% during the

past couple of years, Decision/Decisions asks for simple yes or no responses to some questions. But it also elicits less quantitative answers from users. For example, rating the convenience of a fax board vs. a fax machine might get a "low to medium" response from users but "medium to high" from others.

"Decisions are rarely cut-



Dalton Dialogic's Decision/Decisions leads users through a seven-step problem-solving routine

and dried, so we had to build that offness into [the product]," said Phil Paulson, Dalton's vice president.

The inexactness of the process makes the \$149 package different from others in its class,

according to Doug Neal, vice president of Decision Resources Corp., a consulting group in Washington, D.C.

Getting people to enumerate their oft-unconscious rules of thumb for decision-making is valuable, Neal said.

Barnes, who has used spreadsheets and databases to solve problems said he prefers Decision/Decisions because "it forces you to think about lots of factors, but in a systematic way."

However, he said he is skeptical that a stand-alone decision helper such as Dalton's package can make it in this increasingly competitive market where corporate users want to share data across different hardware and software setups.

"People don't have any use for products that don't interoperate with others," he said. When shopping for decision aids, first look at whether the package can run under IBM's OS/2 or Microsoft Corp.'s Windows, then make sure it can communicate with other software on various hardware platforms, he advised.

Decision/Decisions, which is available now, runs on DOS 3.3 on IBM PCs and compatibles and is the second product from 2-year-old Dalton, a scientific and business software developer.

## Facit extends printhead life

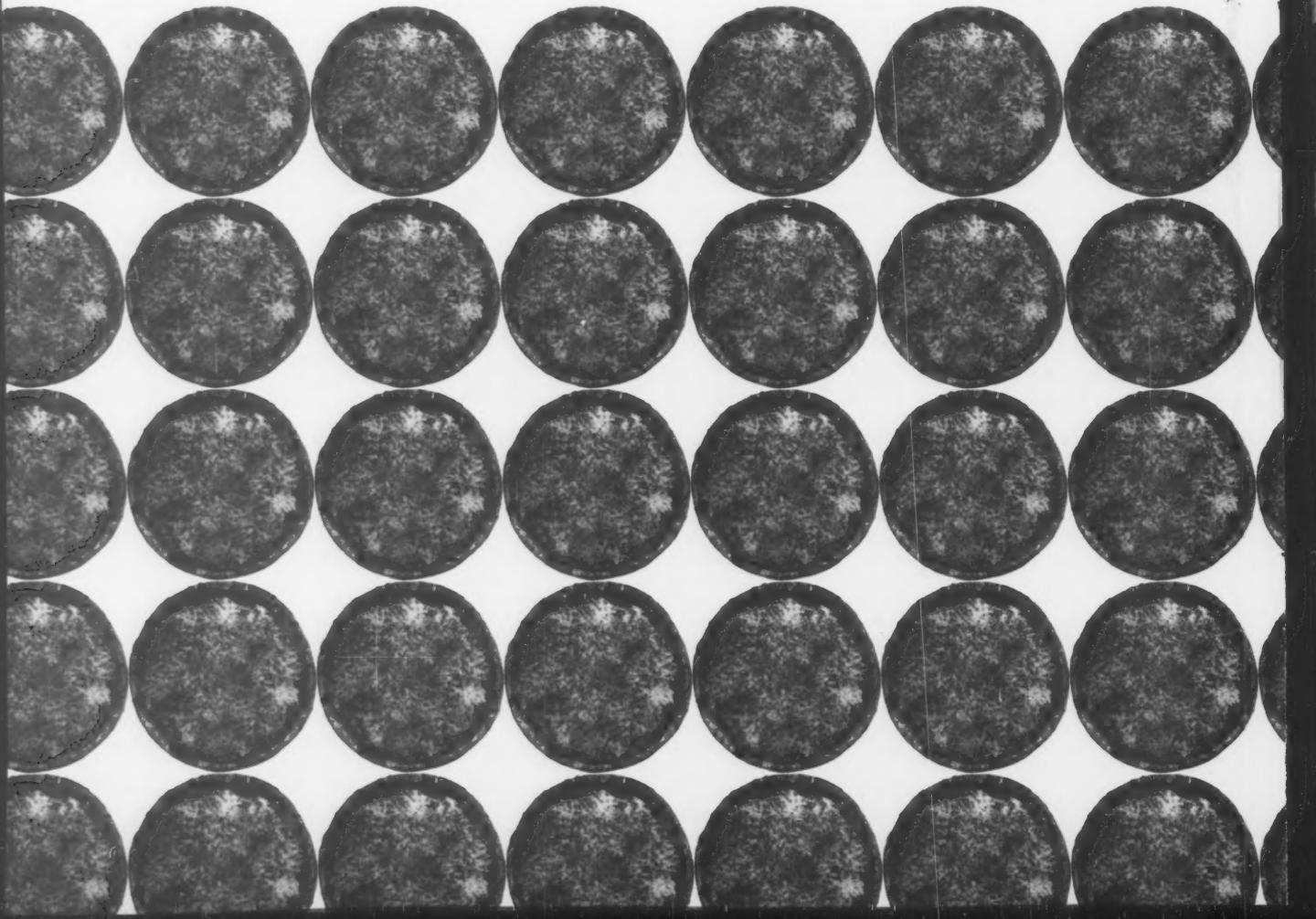
A new facet of printing was revealed as Facit, Inc. unveiled new printhead technology in its two newest products last week.

The E950 and E960 are dubbed "Flexforce" printers, after the proprietary technology that extends the printhead life to 1.5 billion characters. Its ramp design allows it to tilt and print diagonally rather than vertically to either two lines simultaneously in draft mode or single-line, high-resolution printing. According to the company, the printhead is easily replaceable.

"We're mostly going after the low-end industrial market," said company spokeswoman Christine LeCompte, pinpointing typical uses as warehouse/shipping forms and labels, invoices and health care and insurance forms.

The E950 offers IBM Proprinter XL and Epson EX-1000 emulations, with a DEC LA-75 version also available. It can print text and graphics and carries a list price of \$3,799.

The E960 also includes Facit's 5162 interface and offers bar code and variable-size-character printing. It costs \$4,549.



# Marketplace back in business

*Lotus canceled Marketplace: Business, but user interest has revived it*

BY CHRISTOPHER LINDQUIST  
CW STAFF

CAMBRIDGE, Mass. — Marketplace: Business, a marketing database discontinued in January by Lotus Development Corp., is finding new life at start-up Marketplace Information Corp.

Marketplace Information, established by former Lotus managers, purchased a license for the Marketplace technology from Lotus when it was discovered that some Marketplace: Business purchasers still wanted to use the product even after Lotus ceased production and offered them full refund earlier this year.

#### Households unpopular

In January, Lotus Chief Executive Officer Jim Manzi had claimed the company could no longer justify the cost of distributing Marketplace: Business once Marketplace: Households was dropped.



Lotus reportedly received more than 30,000 letters requesting removal of names from Marketplace: Households. The product had also brought an outcry from civil liberty and privacy groups.

Stuart Woodring, director of software strategies at Forrester Research, Inc., a research company in Cambridge, said a smaller firm could probably make a go of it with the product. "Plenty of small companies live off things that big companies with big overheads can't afford to do." He added that the negative publicity Lotus had received would be unlikely to transfer to the new vendor.

Marketplace: Business is aimed at small and medium-size businesses that do not have the resources necessary to develop large-scale marketing databases. Information on more than 7 million U.S. businesses, which was culled from Dun's Marketing Identifiers from Dun & Brad-

street Information Services, is included in Marketplace: Business.

#### Search and select

Users can search the information and select companies based on criteria such as location, type of business, annual sales, number of employees or area code. The data can then be used to create mailing lists, locate new markets or evaluate market potential for products.

Users purchase "meter credits" that allow them to access information from compact disc/read-only memory (CD-ROM) using the Marketplace software.

Marketplace: Business is available for a retail price of \$695 with 3,000 meter credits. Credits may be purchased at a price of \$500 for 5,000.

Previous users of the Lotus product are being offered a discounted price of \$545. The product requires an Apple Computer, Inc. Macintosh with a hard disk drive, 4M bytes of random-access memory, Hypercard Version 1.2 or later and a CD-ROM drive.

## Windows

FROM PAGE 35

Fulton. The Perrysburg, Ohio-based firm is expected to deliver a server at about the same time.

• Although Los Angeles-based Nantucket Corp. does not consider itself a database company per se, its Clipper application development environment has built-in database capabilities that are popular with programmers. President Larry Heimendinger said the company is working on a multiplatform next-generation product that uses object-oriented techniques to access database information. No delivery date has been announced.

• Microsoft is also hard at work on a Windows database product but has been cagey about where it will lead. The firm recently underwent a frenzied hiring effort to create an in-house pool of experts for its SQL Server for OS/2 local-area networks. Some analysts said they feel the team

would be capable of creating "client" database tools that would fit into Sybase Corp.'s database server for OS/2 LANs.

• A dark horse could be Burlington, Mass.-based Alpha Software Corp., whose Alpha Four application has drawn raves from reviewers for its ease of use. A

networked version is expected this fall and a Windows edition is slated to arrive next year, a spokesperson said.

Once large-scale deliveries begin, a bustling market is expected to develop. A Windows-based database will not only replace the intimidating C prompt, obscure DOS commands and baffling "computerese" with graphical presentations, but will tap into a hot trend: client/server computing. Systems administrators are becoming increasingly frustrated with the shortcomings of PC-based database systems and are looking for products that will give them more control over applications and performance.

Information systems professionals are also finding that they can move to systems that provide the power of the minicomputer and the mainframe world with the ease and convenience of the PC. Microsoft's SQL Server is one such product.

Some users, however, remain unconvinced about the need for a Windows-based database. "What are graphics going to do?" asked Rock Blanco, vice president of information systems at Garber Travel Services, Inc. in Boston. "I don't need to sit there with a mouse and draw boxes when I'm doing queries."

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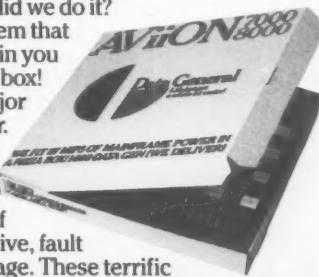
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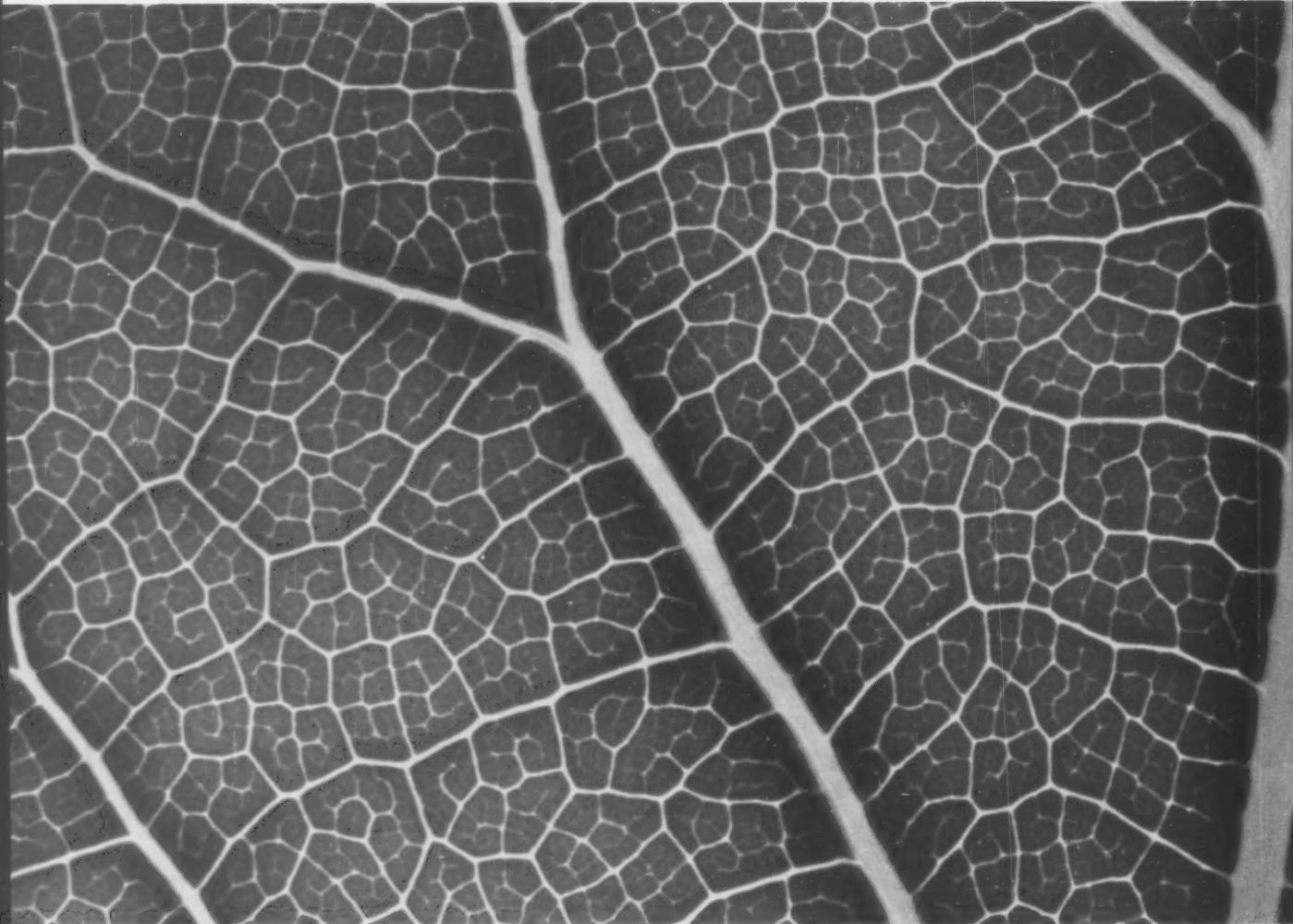
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# Networking.



## Without fresh information

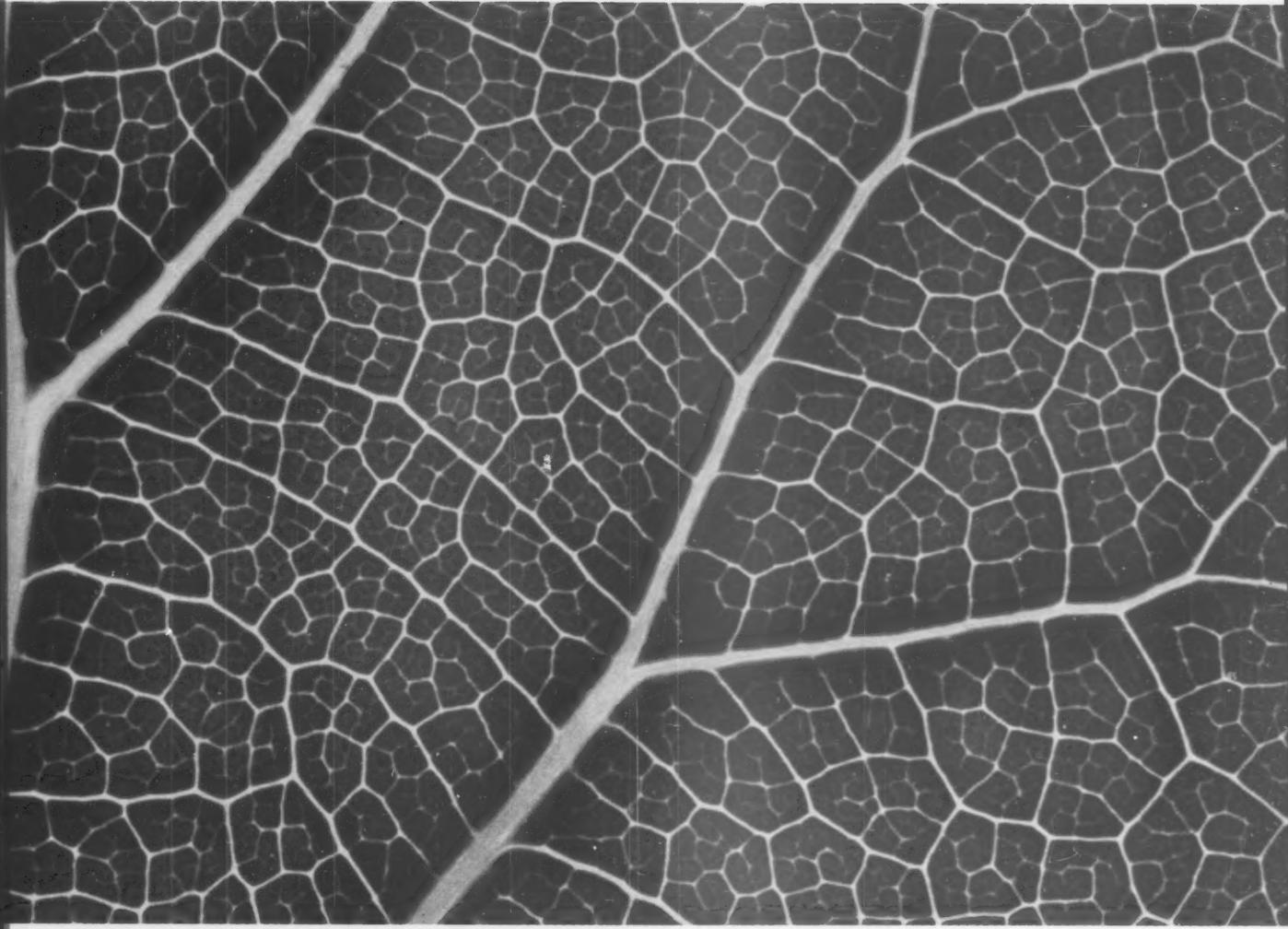
Some say "the network is the system," but we say your network is your *business*. In fact, without a good network you could be out of business.

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Networking shouldn't be done piecemeal; you have to consider all the pieces at once—no matter who made them—and IBM has the resources for helping you do that.

To learn more about IBM networking, talk with your IBM marketing rep. Or to have one call you, call us at 1 800 IBM-6676, ext. 880.



## Keefe

CONTINUED FROM PAGE 37

side of the house, King also rejected the notion that Borland is now positioned to challenge Microsoft and Lotus in the still-up-for-grabs integrated applications sweepstakes. "Working Together" is the new Lotus campaign focused on a common look and feel between Lotus programs that goes right down to identical command names and locations.

"We, over the past year, looked at the Ashton-Tate situation. Outside of Dbase, the products they had were really dog and cat [dissimilar]. It's hard to see how much can be made into a product line. All these products came from various

sources, and [Ashton-Tate] hasn't done any integration," King said.

**How embarrassing.** Now that Borland has snapped up Ashton-Tate, will Philippe Kahn drop Ashton-Tate's suit against Fox Software? As noted by King of Lotus, Borland would wind up talking out of both sides of its mouth otherwise. Borland, of course, is the defendant in a copyright infringement suit filed by Lotus. The situation has tickled a few funny bones, a number of which can be found at Lotus.

**Attention shoppers.** Everyone is looking for a DOS 5.0 bargain, which is not surprising given the range in prices [CW, July 15]. Volume buyers, of course,

have the edge, so low-end pricing may not be applicable to users looking to buy a few copies. Having received a number of calls seeking DOS 5.0 for under \$30, what follows are two resellers that will sell DOS 5.0 at that price under certain conditions: Coresoft in Shrewsbury, N.J., and Spectrum Software in Garland, Texas. As we stumble across more bargain outlets, we'll keep you informed.

**Two cents well-spent.** Want to air your gripes about network software licensing issues? Give the Micro Manager's Association (MMA) a call at (908) 580-9091. The group is putting together a white paper on the issue, which should provide software developers with recommendations and will welcome the

feedback. The paper should be ready for the MMA's annual conference, slated for Oct. 2 in New York, so you should place your calls soon. Users wondering whether their input will have an impact might want to consider this historical note from Gordon Eubanks, president of the Software Publishers Association: "After all, it was a customer mandate that spelled the end for copy protection."

**Casting its net ever wider.** The New York-based MMA, incidentally, is expanding on a global basis. It hopes to grow its existing base of 750 members to 1,500 by year's end. So don't be shy. You can obtain membership information by calling the number listed above.

**Too little, too late?** It would appear that in some cases, even in some OS/2 accounts, IBM's deal to resell CC:Mail from Lotus is a bit late. The Royal Bank of Canada, a huge OS/2 account, had al-

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**F**OR ALL MICROSOFT'S posturing about how OS/2 is dead, Consumer Software has just delivered a beta version of an OS/2 Presentation Manager client for its Network Courier mail system.

ready inked a deal for 15,000 licenses from none other than Microsoft's Consumer Software Division. A very rough survey of users during the past few weeks indicated that few, if any, mail decisions will be swayed by IBM's endorsement of CC:Mail. On the flip side, George Oliver from the Royal Bank notes that for all Microsoft's posturing about how OS/2 is dead, Consumer Software has just delivered a beta version of an OS/2 Presentation Manager client for its Network Courier mail system.

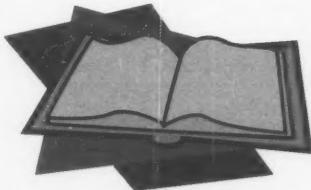
**Mea culpa.** Somehow I misunderstood part of a commentary by Will Fastie, editor of "The Fastie Report," on 1-2-3 for Windows. Fastie does indeed think Lotus has the upper hand over Microsoft's Excel for Windows overall, as reported in this space June 17. However, he *doesn't* think Lotus does the better job of attaching graphics to a spreadsheet document. That honor goes to Excel.

**Oh no, not another one.** Yup, they are at it again. Lotus has covered all the platform bases, but they slipped in two new features — a viewer and auditor — into the recently released 1-2-3 Release 2.3. Then they decided to add the same functionality to 1-2-3 Release 3.1. Those features, plus a few more enhancements, led to the delivery last week of 1-2-3 for DOS Release 3.1+. Other additions include Lotus' Solver technology from 1-2-3/G, a DataLink driver for Borland's Paradox Tables, a three-dimensional multipage worksheet, an advanced database and extended, expanded and virtual memory support. Current users of 1-2-3 Release 3.1 can avail themselves of this upgrade for \$49.

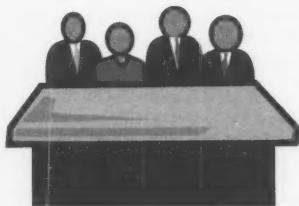
Keefe is *Computerworld's* senior editor, PCs and workstations.

# Which UNIX® RDBMS did Hewlett-Packard®, IBM®, Unisys®, Data General®, AT&T®, Sun®, and Sequent® choose to demonstrate the power of their latest UNIX Systems?

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**IDC Study on UNIX OLTP**  
UNIX On-Line Transaction  
Processing at Multi-User UNIX Sites  
(January 1991) states that some  
47.4% of sites running commercial  
applications on multi-user UNIX  
systems are running OLTP. The  
study reports that Informix is in use  
at more sites than any other DBMS  
for UNIX OLTP applications.



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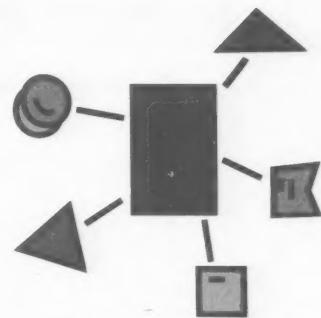
Informix is the number one UNIX OLTP choice. A January 1991 International Data Corporation (IDC) study shows that when it comes to UNIX OLTP applications, Informix products are installed at *more than twice as many* multi-user UNIX sites as our closest competitor. It's independent confirmation that thousands of companies worldwide rely on Informix-based OLTP solutions every day.

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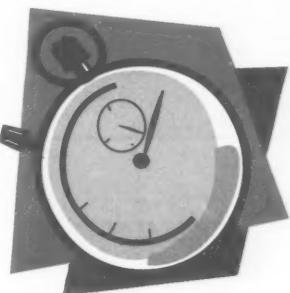
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# Heralded MS-DOS 5.0 earns knocks from users

Upgrade still seen as worthwhile, although users find compatibility and support fall short

BY CHRISTOPHER LINDQUIST  
CW STAFF

Most users are still singing the praises of Microsoft Corp.'s MS-DOS 5.0 upgrade, which recently shipped its millionth copy. But nothing is perfect, and MS-DOS 5.0 is no exception. Users are divided as to whether the compatibility problems that are cropping up are the fault of Microsoft or of other vendors, but all said the benefits of the enhanced operating system make it well worth a few headaches.

Rock Blanco, vice president of infor-

mation systems at Garber Travel Services, Inc. in Boston, said he has installed MS-DOS 5.0 on some database systems and is very happy with the extra conventional memory it gives him. He reported he is still having a few nagging problems, however, particularly with disk-caching programs and some hardware.

#### Support criticized

Blanco said he is not happy with Microsoft's support. "Every time you call Microsoft, they blame it on everyone else but themselves," he said. "I've given up

on Microsoft for support." Instead, Blanco purchased a book on upgrading DOS, which has been helpful. He is also going to try IBM's version of DOS 5.0. If it works better than the Microsoft version, he said he will avoid using the Microsoft upgrade.

Eric Rintell, a vice president at Purchase Ltd. in New York, said he also had trouble loading programs into upper memory. He indicated that he thinks the problems occur primarily in older programs with ill-behaved memory management, not with MS-DOS 5.0, however.

Optimizing DOS 5.0's memory man-

agement is a problem, Rintell said. Manually configuring MS-DOS 5.0's memory management features can be a matter of hit or miss, unlike some other memory products that include automated optimization, he added.

Despite these problems, however, users are still finding MS-DOS 5.0 to be more than worthwhile and very easy to use. "It's a no-brainer," Blanco said.

However, users are split as to whether the new utilities supplied with DOS are going to be used.

Ken Middleton, owner of KPM Computer Systems & Graphics in Bedford Hills, N.Y., said he is currently using the built-in DOS shell and undelete utility to replace utilities he once had to buy separately. He indicated, however, that most of his users are not using the utilities because "it hasn't been around that long." He also noted that people sometimes forget that the new features, such as the Help command, even exist.

Other users reported that they will continue to use the utilities they are familiar with, even if substitutes are now supplied with DOS.

"I use other programs," said Michael Sheafe, senior instructional designer at American Express Co. "It's what I know, so it's what I use."

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## X terminal users get remote access to Mac programs

BY CHRISTOPHER LINDQUIST  
CW STAFF

X Window System users looking for a way to operate Apple Computer, Inc. Macintoshes remotely may need to look only as far as Planet X.

That's the catchy name that Intercon Systems Corp. in Herndon, Va., has applied to its communications package designed to let users operate Macintosh computers remotely from an X Window System client workstation.

According to Intercon, the product will duplicate the Macintosh screen in a window on the workstation, allowing users to access any Macintosh-based application remotely.

Planet X reportedly allows users at remote sites to view and edit files, troubleshoot systems and train operators without leaving their workstations. In addition, other X Window applications can run on the workstation simultaneously with the Planet X Macintosh session. Information from Macintosh applications can also be cut and pasted to X Window applications.

Security features include passwords, selectable privileges and a password override. The X Window user also maintains master mouse control at all times.

Planet X requires a Macintosh with at least 1M byte of random-access memory for black-and-white graphics, 2M bytes of RAM for color and 3M bytes of RAM if the System 7.0 operating system is to be used. System 6.0.5 or later is also needed.

The product supports a variety of LocalTalk gateways as well as Ethernet adapters. It is expected to ship next month for a retail price of \$295, according to the company.

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# Freehand 3.0: Tools more accessible

**Technology Analysis** — A roundup of expert opinions about new products. Summary written by New Products Writer Derek Slater.

**R**ather than encumber Freehand 3.0 — the latest version of its Apple Computer, Inc. Macintosh graphics package — with new tools, Aldus Corp. has made the existing ones more accessible and easier to use.

**Drawing/Editing tools:** Freehand's drawing precision is markedly better in Version 3.0. Users can edit drawings in preview mode. No new tools have been added, but reviewers still found its drawing and editing tools very strong.

**Ease of use:** The addition of "Color, Layer and Style" palettes makes these functions easy to manipulate.

**Speed:** Freehand's screen redraw rate, although improved significantly in Release 3.0, still lags behind the competition's.

**Documentation:** The tutorial manual is particularly thorough. Online Help is context-sensitive.

**Service and support:** Technical service is free for 90 days and earned a rating of "good" from *Infoworld*.

**Overall:** The \$595 Freehand 3.0 is a very good value. Its advantages are strong import/export facilities, editable full-color previews and exceptional ease of use.

Aldus Corp.'s Freehand 3.0							
Reviews	Drawing/Editing tools	Ease of use	Speed	Documentation	Service and support	Overall	
<i>Infoworld</i> 6/17/91	Very good	Very good	Satisfactory	Very good	Good	7.2*	
<i>MacUser</i> 7/91	Improved functionality	Easier to use	Powerful	Excellent	NC	Refreshing approach	
<i>Macweek</i> 4/2/91	Good	Very good	Very good	Good	Good	Good	
<b>Users</b>							
Jamie Woods, Philadelphia Chewing Gum Corp.	■■■	■■■	■	■■■	■■■	Editable previews are best part	
Christopher Mueller-Wille, Michelin Travel Publications	■■■	■■■	■	■■■	■■■	Pallettes cramp screen	
Robert Bohannon, U.S. Geological Survey	■■■	■■■	■	■■■	■■■	Handles encapsulated Postscript	
Tony Klassen, Thirst	■■	■■■	■	■■■	■■■	My favorite package	
<b>Analysts</b>							
Jerry Stern, Novaworks Computer Systems	■■■	■■■	■■■	■■■	■■■	More automated than competitors	
Deborah Hess, Datapro Research Corp.	■■■	■■■	■■■	■■■	■■■	A lot easier to use	

Key: ■■■ Very good ■■ Good ■ Fair ■ Poor. Reviewer evaluations are excerpts from articles. Refer to actual reviews for details. User and analyst ratings are based on telephone survey. NC: No comment. \**Infoworld* ratings based on 1-to-10 scale.

Vendor financial ratings		
Analysts	Long-term stability	Short-term performance
David Bayer, Montgomery Securities	■■	■■■
Alfred Tobia, Mabon Nugent & Co.	■■■	■■■

Aldus Corp. is estimated to have profits of \$31.4 million on revenue of \$179.2 million for fiscal year 1991, up from a profit of \$23.7 million and revenue of \$134.9 million in 1990, according to Montgomery Securities.

## Aldus responds

*Conrad Chavez, product specialist:*

**Drawing/Editing tools:** Contrary to what the reviewers say, there are new functions in Version 3.0. They just don't show up in the toolbox. Draw-quick printers generally work.

**Speed:** We added features but actually got faster, which shows that speed is a priority for us. But we concentrated on other things in this release.

# Illustrator 3.0: Improved text-handling

## Adobe Systems, Inc.'s Illustrator 3.0

Reviews	Drawing/Editing tools	Ease of use	Speed	Documentation	Service and support	Overall
<i>Infoworld</i> 6/17/91	Excellent	Good	Very good	Very good	Good	7.4*
<i>MacUser</i> 2/91	Best tools around	Easy to use	NC	NC	NC	Best buy
<i>Macweek</i> 2/91	Improved type handling	Versatile	NC	Limited on-line help	NC	Functions outweigh faults
<b>Users</b>						
Jules Vitali, Polaroid Corp.	■■■	■■■	■■■	■■■	■■■	Greatly improved
Paul Pugliese, Time magazine	■■■	■■■	■■■	■■■	■■■	Very useful for maps
Robert Bohannon, U.S. Geological Survey	■■■	■■■	■■■	■■■	■■■	Best editing tools
Philip Brown, The Art Department Co.	■■■	■■■	■■■	■■■	■■■	Some type tools weak
<b>Analysts</b>						
Jerry Stern, Novaworks Computer Systems	■■■	■■■	■■■	■■■	■■■	More elegant tools
Jenn Haggard, Electric Press	■■■	■■■	■■■	■■■	■■■	Needs improved dialog box

Key: ■■■ Very good ■■ Good ■ Fair ■ Poor. Reviewer evaluations are excerpts from articles. Refer to actual reviews for details. User and analyst ratings are based on telephone survey. NC: No comment. \**Infoworld* ratings based on 1-to-10 scale.

## Vendor financial ratings

Analysts	Long-term stability	Short-term performance
David Bayer, Montgomery Securities	■■	■■■
Alfred Tobia, Mabon Nugent & Co.	■■■	■■■

Adobe Systems, Inc. is estimated to have profits of \$50.8 million on revenue of \$219.7 million for fiscal year 1991, up from a profit of \$40 million and revenue of \$168.7 million in 1990, according to Montgomery Securities.

## Adobe Systems responds

*Paul Towner, product marketing manager:*

**Ease of use:** Chart and initial capital functions are not at all complicated if you know how to use the product. There's not a single button for every graph function; that's why the graphing tools are included. You can make any kind of chart you want.

**Documentation:** There's an information window on-line. It has gotten positive user feedback.

**W**ith the introduction of Version 3.0, Adobe Systems, Inc. has dramatically strengthened Illustrator, its Apple Computer, Inc. Macintosh graphics package. Of particular note is the package's text-handling capability, the function that had been the product's Achilles' heel. Overall, reviewers found the new version a powerful tool for graphic design.

**Drawing/Editing tools:** A host of strong text-handling tools has been added. Users can switch fonts, colors and sizes in any text block. Text can be imported and placed on a curved or polygonal object.

**Ease of use:** Illustrator's interface has been improved for easier use, although reviewers said a few procedures are still clumsy.

**Speed:** *Infoworld* rated Version 3.0's performance "very good," although somewhat slower than that of the previous release.

**Documentation:** Reviewers gave praise to the printed Help manuals but panned the on-line Help.

**Service and support:** Telephone support is unlimited and free, though not toll-free.

**Overall:** Illustrator, which is bundled with Adobe's Type Manager, Separator and Drawover software, is a very good value at \$595. Its primary strengths are its powerful editing tools and improved text-handling.

## NEW PRODUCTS

## Software applications packages

Meca Software, Inc. has announced a version of its Managing Your Money software for the Hewlett-Packard Co. HP 95LX palmtop computer.

The program is produced on a read-only memory card that plugs directly into the HP system and offers a number of money-management features.

The product costs \$99.

**Meca Software**  
327 D Riverside Ave.  
Westport, Conn. 06880  
(203) 222-9150

Prisma Software Corp. has announced Yourway 2.0, a contact management software system for Microsoft Corp.'s Windows 3.0.

Yourway 2.0 includes a contact database that records contact history, a task and call management system, a letter processor and a report generator. The program supports Windows' Dynamic Data Exchange facility. A network version is also available.

The contact management software system is priced at \$199.

**Prisma Software**  
2301 Clay St.  
Cedar Falls, Iowa 50613  
(319) 266-7141

Blossom Software Corp. has created Write-in 1.3, a word processing add-in software package for use with Lotus Development Corp.'s 1-2-3 spreadsheet.

Write-in 1.3, which is compatible with all Lotus versions, according to Blossom Software, offers full word processing functionality and can exchange data with Lotus worksheets. The revision includes a compacted file format, a file delete command and enhanced printer control.

Write-in 1.3 is priced at \$129.95. Upgrades from Version 1.2 are available at a price of \$29.

**Blossom Software**  
Building 600  
One Kendall Sq.  
Cambridge, Mass. 02139  
(617) 738-1516

## Software utilities

Fifth Generation Systems, Inc. has announced Fastback Plus 3.0.

The backup software utility includes a new windows-driven interface, an Express Menu System, unattended backup scheduling and file-server support, the company said. The macro language has also been enhanced, and history files in an Ashton-Tate Corp. Dbase-compatible format have been added.

The price is \$189. Upgrades from previous versions cost \$49.

**Fifth Generation Systems**  
10049 N. Geiger Road  
Baton Rouge, La. 70809  
(504) 291-7221

## Systems

AST Research, Inc. has announced new options for the AST Premium Exec notebook computers.

A data/fax send and receive modem option and a second serial port adapter option have been added. The data/fax modem, with 9.6K bit/sec. transmission capability, retails for a price of \$499. The serial port adapter costs \$99.

The company also lowered pricing for its Fastboard upgradable architecture boards.

Pricing for the Intel Corp. processor-based boards is as follows: the Fastboard 486/33 with 8M bytes of memory costs \$3,045; the Fastboard 486/33 with 4M bytes of memory costs \$2,595; the Fastboard 486SX/20 with 4M bytes of memory costs \$1,595; and the Fastboard 386/33 with 4M bytes of memory costs \$1,545.

**AST Research**  
16215 Alton Pkwy.  
Irvine, Calif. 92713  
(714) 727-4141

Micro Express has unveiled a personal computer based on the Advanced Micro Devices, Inc. 40-MHz AM386DX processor.

According to the company, the base configuration of the ME 386-40 includes 4M bytes of random-access memory and a floppy disk drive for \$1,949.

The PC also includes a 64K-byte RAM cache and zero wait-state operation.

A system with an 80M-byte hard drive and Super VGA monitor is priced at \$2,899.

**Micro Express**  
1801 Carnegie Ave.  
Santa Ana, Calif. 92705  
(714) 852-1400

## Data storage

Megabyte Computers, Inc. has developed an internal memory upgrade for the Atari Computer Corp. Portfolio handheld computer.

The service raises Portfolio's random-access memory from 128K bytes to 512K bytes. According to the firm, the memory increase does not appreciably affect the system's battery life.

The upgrade costs \$350, which includes a six-month warranty. The upgraded system is returned to the user within 14 days of receipt at Megabyte, the company said.

**Megabyte Computers**  
909 Melbourne  
Hurst, Texas 76053  
(817) 589-2950



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# digital update

NEWS AND VIEWS JULY 1991

In the broadest sense, outsourcing is simply the purchase of services externally, rather than supplying them internally. The rationale being that this approach to service can help improve your company's competitive advantage and profitability.

How? By becoming involved in an intricate and extensive business analysis to develop and implement a tailored outsourcing strategy. Such analysis forces a re-evaluation of the use of internal resources and services, while driving your organization toward a tighter focus on its unique value to the marketplace.

These days, no company can "do it all." Mutual dependencies, shared risks, and shared rewards are the new operating goals. In developing a relationship with an outsourcing partner, you can benefit from managing variable rather than fixed costs, and gain access to just-in-time resources. This in turn promotes a refocusing on growth and competitive positioning.

#### The Growing Service Component

The pace of change today is quickening. Markets are increasingly global, and organizations see internationalization in vendors, customers, partners, and competitors. As pressure rises to improve productivity and decrease time-to-market, so does dependence on technology—and all the while you're continually driven to become more cost-effective, and efficient, without sacrificing quality or customer satisfaction.

In this context, service has indeed become a major issue. To succeed, you may find yourself expanding the management and execution of support and service functions. But this can prove counterproductive, as you run the danger of diluting talent and focusing attention away from your core business. Meanwhile, the complexity of service and support increases: multiple service contracts with numerous vendors, rising inventory, and greater asset and personnel costs.

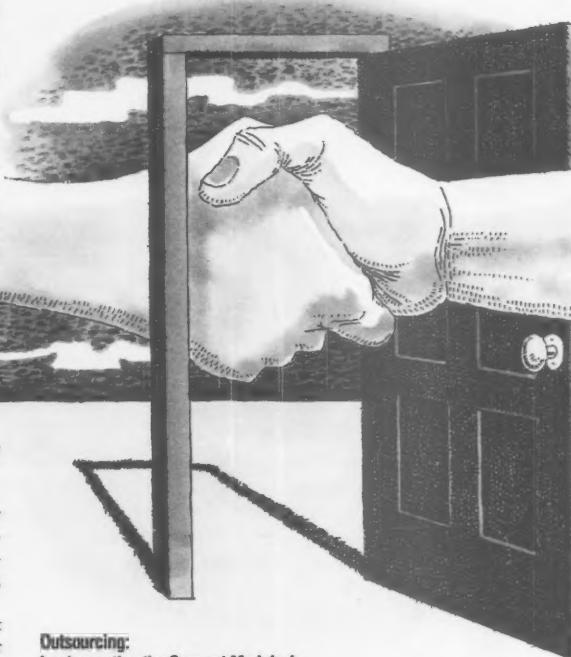
Effective management strategists suggest focusing on identifying the core strengths your company already has or can develop. You can then seek ways to limit, eliminate, or outsource those functions in which the company cannot gain superiority.

By determining the appropriate levels of support and service to be negotiated with a technology supplier, you can gain control and focus on your company's unique value.

## OUTSOURCING

### *What Does It Really Mean?*

**Outsourcing is not the equivalent of "taking over the data center," as some may believe. Rather, it represents a deeper, more involved service relationship between you and a technology supplier. It's a strategy for coping (and succeeding) in today's demanding, dynamic business environment.**



#### Outsourcing:

##### **Implementing the Concept Modularly**

Modularity is inherent to the outsourcing concept. Any outsourcing strategy should be adopted in those areas, functions, or divisions of the company where it makes the most sense—with each module tailored to your unique needs and challenges.

While seemingly a recent development, modular outsourcing is really a familiar business practice. A maintenance contract on a single computer, for example, represents a rudimentary outsourcing agreement. The operation and management of a worldwide telecommunications network is also a form of outsourcing. The extent and magnitude of the operation varies, but the philosophy remains the same.

It is quite likely that an organization's outsourcing strategy will be wide-ranging in its degree of implementation and shared responsibility with a technology supplier. Support services that should be outsourced in a manufacturing plant in one location are probably not the same support services that should be outsourced in a warehousing facility somewhere else.

#### **Vendor Experience Counts**

From Digital's perspective, modular outsourcing is an established business practice that we have evolved over our 30 years in business. As fits our corporate and computing style, outsourcing demands a closer, more interdependent alliance with our customers. Our relationships with you are based on a continuum of services that is flexible and scalable—from the maintenance of a single VAX, to the ongoing support of a large multivendor installation, or beyond that to managing an entire worldwide telecommunications network.

By its very nature, outsourcing cannot be a ready-made solution. It is a tailored relationship modeled on your explicit business requirements and strategies. When applied with creativity, an outsourcing strategy can yield powerful short-term and long-term results.

To some of our customers, outsourcing has meant augmenting their internal capabilities without increasing staff. It has also provided a way to keep abreast of advancing technology, bringing expertise to bear on pressing technological problems without deflecting key people from the core business.

#### **Focus on the Core Business, and Keep the Competitive Edge Sharp**

Gone are the days when gaining a competitive edge depended on owning the largest resource base, research labs, manufacturing sites, and product distribution channels.

Today, our working world is increasingly large and complex. And no one company can excel at all places, in all things. The edge comes now when you define then hone your principal skills and strengths.

An outsourcing relationship with an experienced technology supplier allows you to do just that. The strategy can be modular, with tailored support and service at work at the department, division, or worldwide corporate level.

When you free yourself to concentrate more on doing business rather than operating your business, you gain strategic focus. And that can be the differentiator that spells success.

More on Outsourcing ▶

More on Outsourcing ▾

**Outsourcing.**  
It's a fact.  
Recent studies show that  
five years ago over 70% of  
computer support operations  
were handled internally.  
Today, that's down to 45%.  
Vendors are doing the rest.

## CHOOSING THE RIGHT OUTSOURCING PARTNER

The key to implementing a successful outsourcing solution is to match your business needs with your partner's capabilities. Here are some evaluation criteria to keep in mind:

### Hard Factors

#### (1) Current and Prospective Technologies

- \* Is the technical expertise you need available? In sufficient amount? In the right locations worldwide?
- \* Is your information technology understood, short-term and long-term?

#### (2) Respective Business Practices and Policies

- \* Are your practices compatible?
- \* Can you make a contract together?
- \* Are there workplace issues, such as unions, security, environmental, health, and safety factors?

#### (3) Financial Structures and Long-Term Viability

- \* Can you agree to terms of cost-savings, profit, and mutual gain?
- \* Are cost structures or baselines in place?
- \* What economies can be reached?
- \* Who owns the technology?
- \* How are the assets managed? Depreciated?
- \* What are the performance standards?
- \* What are the risks and potential penalties?

#### (4) The Implementation Plan

- \* What is the timing needed?
- \* What are the stages, benchmarks, and measurements?
- \* What are the payment schedules?
- \* What are the performance standards and quality measurements?
- \* Are service levels reported?
- \* Is there an "adds and changes" plan?

Bottom line, you'll want a relationship that is mutually beneficial, with both parties sharing risk and profit.

### Soft Factors

#### (1) Corporate Cultures

- \* How does the vendor's culture compare with yours? Consider a range of things from personnel metrics and rewards to corporate code of ethics.

#### (2) Philosophy

- \* How does the vendor's philosophy match yours?
- \* Would you feel good "hiring" this vendor as an extension of your staff?

You want an outsourcing partner you can trust and work comfortably with. Involvement and commitment of both executive teams is crucial.

For more information on Digital's modular outsourcing and other tailored, open services, contact your local Digital sales representative.

## Opening the Door to ACE: Get a Head Start Today with Products from Digital

The specifications of the Advanced Computing Environment (ACE) initiative are a confirmation of Digital's open computing strategy. So it's not surprising that we, as a member of ACE, offer a variety of hardware and software products today that will continue to be productive, compatible members of the advanced computing environment of tomorrow.

Digital has systems with the ACE-specified MIPS or X86 processors. Both families of systems share the same ACE-specified data format. We offer workstations and servers with the ACE-specified TURBOchannel bus. And of course, OSF technologies, enhanced by Digital, are the foundation of SCO's new version of the Open Desktop operating system. This means that all 2,000 applications for our ULTRIX operating system will run on the ACE-specified UNIX—SCO's next version of Open Desktop. In addition, our current Intel/SCO products will also run the ACE-specified UNIX.

You can choose Digital now, with the assurance that these products will continue to bring you years of productivity in future ACE environments. And rest assured that Digital's years of multivendor service experience—covering more than 8,000 hardware and software products from over 850 vendors—mean we'll be able to fully support your ACE systems.



*Here are the products Digital offers today that will fit right into the developing ACE sites of tomorrow:*

#### ACE-Compatible RISC workstations:

- DECstation 5000 Series 100  
Model 120 and 125
- DECstation 5000 Series 200

#### ACE-Compatible RISC Servers:

- DECsystem 5000 Model 200
- DECsystem 5100
- DECsystem 5500

#### ACE-Compatible X86 Personal Computers:

- DECpc 433 Workstation networked client  
and windowing system
- DECpc 433T deskside system
- DECstation 320sx desktop system
- DECstation 320+ desktop system
- DECstation 325c desktop system
- DECstation 333c desktop system
- DECstation 425c desktop system
- DECpc 333 portable laptop system
- DECpc 320sx notebook system

#### ACE-Compatible X86 Servers and Multuser systems\*\*:

- DECpc 433T deskside system
- applicationDEC 433MP
- applicationDEC 316
- applicationDEC 325
- applicationDEC 333

#### PATHWORKS Client/Server-Based PC Networking Software to Link ACE and Non-ACE Systems:

- PATHWORKS for OS/2 client software
- PATHWORKS for ULTRIX server software
- PATHWORKS for VMS server software
- PATHWORKS for DOS client software
- PATHWORKS for Macintosh client software

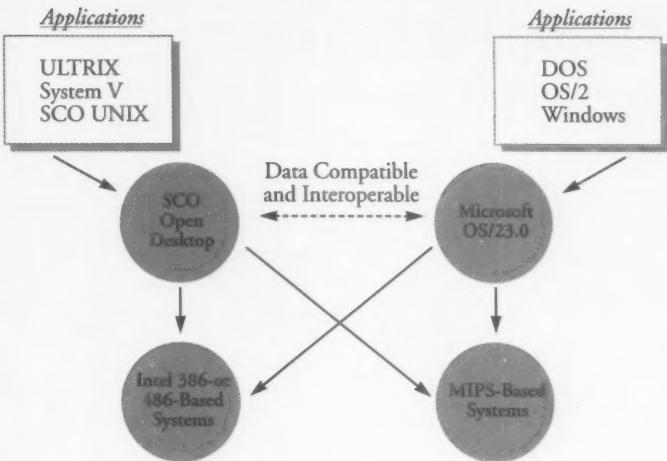
\*\*Running SCO UNIX operating system.

## ACE Players

Along with Digital, these vendors are currently participating in the ACE initiative:

Acer Group  
Compaq Computer Corporation  
Control Data Corporation  
Kubota Computer Inc.  
Microsoft Corporation  
MIPS Computer Systems Inc.  
NEC Corporation  
NKK Corporation  
Olivetti Systems and Networks  
Prime Computer Inc.  
Pyramid Technology Corporation

The Santa Cruz Operation Inc.  
Siemens AG/Automation  
Siemens Nixdorf Informationssysteme AG  
Silicon Graphics Computer Systems  
Sony Corporation  
Sumitomo Electric Industries Ltd.  
Tandem Computers Inc.  
Wang Laboratories Inc.  
Zenith Data Systems (a Groupe Bull Co.)



ACE means two operating systems—Microsoft's forthcoming OS/23.0 and the Santa Cruz Operation's UNIX-based Open Desktop—are to be available on a standardized RISC platform based on microprocessors designed by MIPS Computer Systems and Intel-based systems. All are sold by Digital, COMPAQ, and 30 other systems vendors.

## Upcoming Events: August/September 1991

### Software Forum Slated for September

Digital's Independent Software Vendor (ISV) program is pleased to announce that the second International Business Development Forum is scheduled for the week of September 22, 1991, at the Hyatt Regency Grand Cypress Resort in Orlando, Florida.

Last year's forum successfully brought together more than 500 developers and distributors interested in expanding into new markets. Plans this year call for a showcase area to highlight developers demonstrating their applications on Digital workstations. The agenda also includes general sessions, special interest sessions, roundtable discussions, and plenty of meeting time.

For more information, call 800-DEC-ISVN, or fax 508-467-1620.

*Mark your calendar!*

### Discover the Right Solution

Looking for specific product information on current networking products? Or maybe you want to know more about Digital's COHESION Software Development Environment?

These are just a sampling of the nearly 40 relevant topics being tackled by the Digital Discovery Seminar Series.

Billed as "lightly technical," the Discovery Seminars are an integrated curriculum of presentations designed to provide you with the most up-to-date product, service, application, and technical information. Each seminar focuses on a specific solution and how it solves the kind of problems you encounter every business day. Seminars are free to our customers. They're held at local Digital facilities and customer sites at a variety of locations.

The broad range of topics is reflected in this sampling of upcoming Discovery Seminars:

*Network Application Support*  
August 8/St. Louis, MO

*Electronic Data Interchange*  
September 5/St. Louis, MO

### Desktop Integration

September 11/Bakersfield, CA  
September 12/Chicago, IL

*ALL-IN-1 Phase II: Desktop Solutions*  
September 17/St. Louis, MO

*Digital's Visualization Seminar*  
September 17/Rockford, IL

*PATHWORKS for Macintosh*  
September 19/Tucson, AZ

*Windows and Workstations*  
September 19/Peoria, IL

*Client/Server Computing*  
September 24/Ridgecrest, CA  
September 24/Anchorage, AK

*The Integrated Office*  
September 24/San Diego, CA

*The UNIX Environment*  
September 26/Las Vegas, NV

*Enterprise Messaging*  
September 26/St. Louis, MO

*High-Availability and Fault-Tolerant Computing*  
September 26/Chicago, IL

For more specific curriculum details, plus seminar calendars and registration information, please contact your local Digital sales representative, or call 508-496-8958.

# Frameworks for the Engineering Environment

*Framework technology provides flexibility for users, control for managers.*

Computer-based design tools allow engineers to develop complex products faster than ever before. But while these tools solve the challenges of complex product development, they in turn create a complexity all their own.

In electronics design, for example, where four tools would be used to design an integrated circuit 10 years ago, 20 or more are used now. To make matters worse, tools and computer systems are constantly being added or subtracted from the mix to meet changing design requirements or to make use of the latest technology. Libraries of current and archived designs have to be managed, with the ability to track product data generated at all stages of the design process and among all members of the design team.

Just managing such an environment is a tremendous job. Something has to give. According to recent studies, design errors now account for an average of 20 percent of product costs. What is worse, these errors account for 37 percent of product development time.

## Enter Framework Technology

One answer to the problem is frameworks, which integrate an engineer's tools and data through a common user interface.

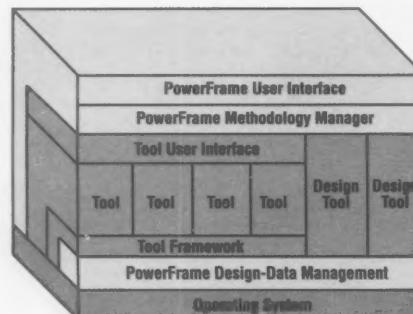
There are two implementations of framework technology available today: engineering design automation (EDA) frameworks and design-data management frameworks. You'll find you'll need a combination of both to address your full range of design management problems.

Specifically, EDA frameworks support a set of closely related tasks, and are usually provided by tool vendors to tightly integrate their own set of design tools. Design-data management frameworks address the higher-level problems of work process management and design-version control across the entire product development cycle. They also help with configuration management and design traceability.

## All Engineering Benefits

Design-data management frameworks will go a long way toward helping engineering management to truly manage multi-discipline design efforts that span electronic, mechanical, and software design, as well as documentation.

Each discipline has its own set of sophisticated computer-based tools—and its own set of design process headaches. The right frameworks can make ECAD, MCAD, and CASE all play together



**Digital's PowerFrame design-data management framework unites all design tools, data, and processes into one common environment. PowerFrame runs on UNIX workstations and servers from Sun, HP/Apollo, and Digital.**

efficiently, and ensure the resulting designs are well matched.

For engineers and designers, design-data management frameworks offload the administrative burden that comes with using multiple tools from multiple vendors, and juggling files among design team members. Frameworks can manage tool input and output data, and the files and file versions the tools generate. They can also manage the design process by automatically invoking tools in a predefined sequence using the appropriate data for each tool run. This ensures that the designer is always working with the right data on the right tool at the right time.

Frameworks can provide the foundation for companies to implement concurrent engineering techniques to improve team and organizational productivity. That means a variety of groups, including manufacturing and support, could participate in design from the conception stage, and that project activities could be performed in parallel. With a multi-discipline design environment under automated control, this now becomes possible. In fact, it could prove to be the most rewarding return of all from frameworks.

## Digital's PowerFrame Sets the Standard

Like nearly everything involving new technology, frameworks need agreed-upon standards to assure wide acceptance and long-term viability. In 1988, a group of CAD vendors and users formed the CAD Framework Initiative (CFI).

The CFI mission is to define the features an open, heterogeneous design framework should offer and to develop the industry standards necessary to make that possible. The objective is to create a "free-market" model in which users can employ any combination of tools, platforms, and operating systems in building their design framework.

As a charter member of CFI, Digital is committed to the development of framework standards. In fact, Digital's PowerFrame design-data management framework already has a good deal of the CFI-specified structure in place.

Offering extensive features and capabilities, PowerFrame runs on all popular UNIX workstations and servers, including those from Sun, HP/Apollo, and Digital. PowerFrame can "encapsulate" any commercial or user-developed design tool. It can even accommodate other frameworks. It is this openness that enables PowerFrame to preserve your investments in hardware, software, and training—despite the perpetual flux of the design environment.

For a copy of Digital's just-published PowerFrame Handbook, call 800-332-4636 ext. 100.



Twenty-two leading CAD tool vendors have joined Digital in supporting PowerFrame as the framework standard. They've recognized the need for an open design-data management framework, and believe that PowerFrame offers the most flexibility today for truly open technology.

As members of the PowerFrame Synergy Program, these vendors are encapsulating their tools (and design automation frameworks) within PowerFrame. The vendors include:

ADRA Systems Inc.	Matra Datavision	Schlumberger Technologies CAD/CAM Division
Applied Information Systems Inc.	MCC/CAD Framework Laboratory	Sherpa Corporation
Cadence Design Systems Inc.	McDonnell Douglas Systems Integration Co	Silvar-Lisco
Data I/O Corporation	Meta-Software Inc.	Swanson Analysis Systems Inc.
GenRad Fareham Ltd.	NEC Electronics Inc.	Teradyne Inc.
Harris Corporation/Scientific Calculations Division	Parametric Technology Corporation	Valid Logic Systems Inc.
Logical Devices Inc.	PDA Engineering	
	Racal-Redac Inc.	Viewlogic Systems Inc.

# NETWORKING

## COMMENTARY

Gary H. Anthes

## An open connection?

I recently eavesdropped on a woman and learned her name, her account number and her checking account balance. At the time, she had \$7,540.94 at Riggs National Bank in Washington, D.C.

Next, I listened to a man plead with his girlfriend, with whom he had apparently recently had a fight, to forgive him and meet him for lunch. She agreed.

After that, I listened to an Italian woman, a reporter, it seemed, ask a public relations person at a museum about some sort of scandal. "You'll have to fax us your questions," the PR person said.

I wanted to say to the reporter, "Hey, that sounds familiar!" but she wouldn't have heard me. No one could hear me through my office telephone that Monday afternoon, but I could hear any number of two-way conversations as I periodically tested my phone while awaiting repair.

As I listened to this unwanted party line with a mixture of fascination and horror, two things became increasingly clear: First, the security of my telephone system, which I had never questioned, was obviously flawed. Second, a surprisingly large number of telephone calls involve sensitive information passed between people who surely never stop to think someone could be listening in.

It is well-known that mobile

*Continued on page 55*

## ANALYSIS

BY JIM NASH  
CW STAFF

Information systems managers using third-party software to link Apple Computer, Inc. Macintoshes with the outside world — particularly the IBM part of that world — are generally happy with their connectivity.

Some, however, are questioning Apple's continued reliance on third-party companies to develop the bulk of the Macintosh software links to IBM and other minicomputer and mainframe makers.

Apple should continue to concentrate on what it does best: hardware and basic operating systems software, some users said. Others disagreed. They said Apple should take a role in

producing at least some key applications to set a direction for third parties.

In a recent press briefing covering Apple's plan to work with IBM on future hardware and software, Apple executives said the company will take a greater role in writing software connecting heterogeneous — typically corporate — environments.

Jim Groff, acting director of Apple's Enterprise Systems Division, said work was under way to more closely link Apple and IBM when the announcement was made this month. Late last month, Apple began shipping Snaps, its software-only gateway to IBM Systems Network Architecture environments.

Whatever Apple's ultimate software development strategy

is, most users agreed that the company must be able to present an interwoven group of products that link Macintoshes in heterogeneous settings faster than most current applications.

"There is a perception that you can't connect Macintoshes to mainframes," said Jamie Sonsini, Unix and office systems manager at the University of California at Santa Barbara.

The perception may be incorrect, he said, "but it is fair to say Apple has lagged behind in the [mainframe connectivity] market."

Mark Ryding, network manager at Evans and Sutherland Computer Corp., a Salt Lake City graphics software maker, said he is disappointed in Apple's MacTCP running under its new

System 7.0 operating system. MacTCP connects Macintoshes to Transmission Control Protocol/Internet Protocol (TCP/IP) networks.

### System 7.0 drawback

Ryding said the utility is not fully functional under System 7.0. "It does not give us sufficient control over its function," he said, explaining that there is, for example, "no way to change broadcast addresses under MacTCP."

He said Apple has dropped the ball with TCP connectivity, leaving improvements and add-on components up to third parties. Ryding said he gets the feeling that Apple engineers are saying, "It's not fun anymore; let's do something else now."

In other instances, Apple has been late to the game. MacDFT,

*Continued on page 56*

## Phone overload tagged to large-system congestion

BY GARY H. ANTHES  
CW STAFF

Recent disruptions to Bell Atlantic Corp.'s and Pacific Bell's common-channel Signaling System 7 (SS7) networks were triggered by more or less normal component failures of the type that occur in any large system.

As switches, called signal transfer points (STP) by manufacturer DSC Communications Corp., attempted to reconfigure the networks around the problems, they sent control and diagnostic messages to other processors on the network. The combination of these network

management messages and heavy network traffic at the time overwhelmed the STPs.

STP software contained routine procedures to deal with such congestion, but they were not invoked because of a bug. The algorithms would have allowed the STP to purge its message queues of excess messages, according to a priority scheme specified by SS7 protocols.

### Flawed SS7 specs

Frank Perpiglia, vice president for technology and product development at Plano, Texas-based DSC, acknowledged the bug in his company's software

but said SS7 specifications as laid out by Bellcore for its Bell telephone company clients may be flawed.

Perpiglia said DSC gave some non-Bell carriers slightly different implementations of the software nine months ago, at their request. That software, which Perpiglia said has not failed, allows the switch to throw away low-priority messages, if necessary, to deal with congestion.

According to John O'Rourke, a Bellcore assistant vice president and a leader of the multi-vendor task force investigating the network outages, Bellcore specifications are completely consistent with U.S. and international standards for SS7.

"We have not yet found any flaw in the Bellcore requirements. In fact, we believe that as of this stage of the investigation, it appears that the spread of con-

gestion may have been because of a lack of full implementation of those standards," O'Rourke said.

### Unanswered questions

O'Rourke said questions remain about the networks, including the adequacy of the power of the STPs to process a high volume of network management messages with very low delays. He said possible delays in updating network routing tables may have contributed to the failures.

It is also not yet known why software errors introduced in April lay dormant until late last month and then struck multiple sites almost simultaneously.

O'Rourke said the task force will continue its work until all parties are satisfied that all contributors to the problem have been found and eliminated and permanent fixes are in place.

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*Making your systems perform*

# Beta-test users mold E-mail monitor

*Soft-Switch redesigned interface to reflect needs of beta-test participants*

BY ELISABETH HORWITT  
CW STAFF

WAYNE, Pa. — Soft-Switch, Inc.'s Mail Monitor has successfully undergone beta testing and is now shipping to customers — with several major modifications suggested by beta-test users.

The beta test was extremely interactive, with the result that "the user interface changed drastically from the first to second release, mostly because of beta participants," said John Cornell, a technical analyst at New York agricultural products trader Continental Grain Co.

Soft-Switch was particularly aggressive about eliciting user response for Mail Monitor because customers, many of them Fortune 500 companies, "had quite a bit of info to offer as to how the product functions in their specific environment," company spokesman Stuart Finn said. This applies both to the user interface — "the more people have been playing with the interface, the more stable and functional it becomes" — and to specific electronic mail configurations, Finn said.

While Soft-Switch has on-site facilities to test Mail Monitor with each gateway, the vendor cannot test how the monitoring system will work across a multi-node network of, say, 40 IBM Application System/400s or six IBM Professional Office System hosts, he added.

Soft-Switch officially announced its multivendor E-mail monitoring product last March and released it at the end of last month.

#### Automatic probes

Mail Monitor was designed to automatically send out probes at intervals to a series of gateways that link different vendors' E-mail systems on a corporatewide network. Because a given E-mail message may pass through multiple gateways before it arrives at its destination, finding out the reason why a particular message or batch of messages did not arrive requires probing each gateway in turn.

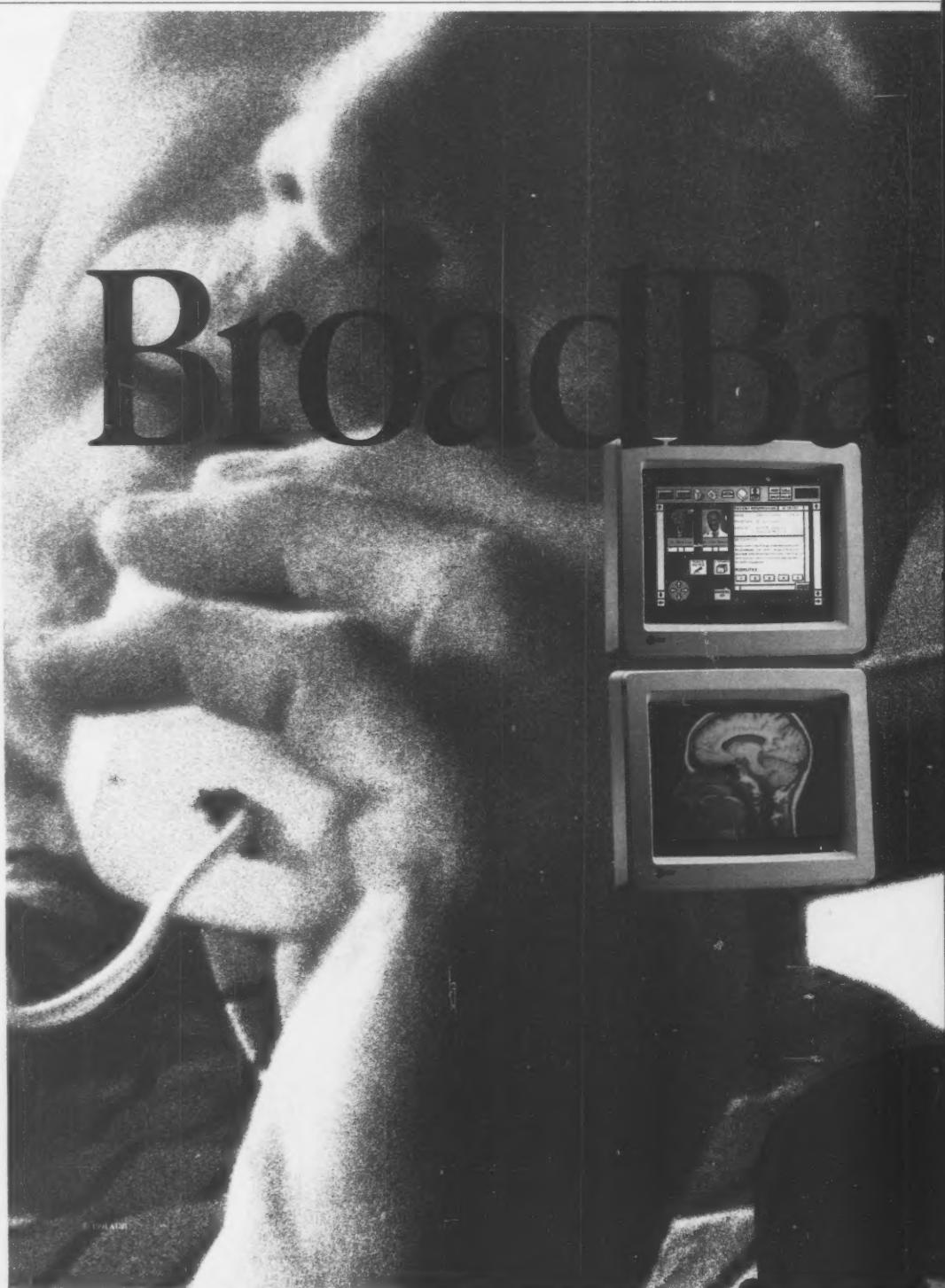
For example, Continental Grain's E-mail network consists of a mixture of host-based, local-area network-based and service-based E-mail systems. It is configured so that all U.S. messages to Europe have to go through a New York gateway to the Geneva hub, which then distributes them to other European cities, Cornell said. For example, if a message sent from Chicago to Hamburg, Germany, does not arrive, it is necessary to send a probe to the Chicago, New York, Geneva and Hamburg gateways in succession, to see which gateway is at fault.

Mail Monitor automates a function that was previously performed manually by Continental Grain's data center in Chicago. The center is responsible for keeping the company's global E-mail network up and running 24

hours a day, seven days a week, Cornell said. The firm cannot afford to lose E-mail messages, which are not "about getting together for lunch" but contain crucial data about the status of various trades, he added.

If no one checks the status of the network on a regular basis, a link can be down for hours before anyone realizes it, Cornell said. "Users only realize a message didn't go through when they come back from lunch and still haven't received a reply." An automatic system enables the data center to be active rather than reactive to E-mail glitches, without tying up personnel.

One missing feature that users wanted Soft-Switch to add was a field that displays the average time it took the last five probes to go out to a gateway and come back, Cornell said. "This is very important for setting up the schedule of probing," Cornell said. For example, probes are apt to take a lot longer during the nightly period allotted to backing up the mainframe.



## Anthes

FROM PAGE 51

cellular telephones provide little privacy, so you might assume that the guy in the Mercedes-Benz ahead of you on the freeway is not a CIA agent talking to his mole or a senior executive at IBM discussing the next moves with Apple or Microsoft.

And yet, enough juicy stuff apparently moves over the cellular airwaves to make it worth the trouble to intercept conversations. Virginia Democratic rivals and presidential hopefuls Gov. Douglas Wilder and U.S. Sen. Charles Robb are embroiled in a controversy involving Robb's receipt of an illegal tape recording of a cellular phone conversation. In it, Wilder was

reported to have discussed allegations that Robb attended parties where cocaine was used.

The flap has caused so much embarrassment on both sides that some say the political careers of both men are finished.

It is scant comfort to know that both of these breaches of privacy occurred in add-ons to the basic Bell telephone service, one in a private branch ex-

change — which took a hit during an ungraceful cutover to batteries during a power failure — and the other in a mobile system.

As technology advances, more of these hybrid systems will exist. Privacy laws have failed to anticipate new technologies such as wireless data communication [CW, June 17]. Laws notwithstanding, sys-

tems become more vulnerable as they become more complex, even as individual components become more reliable. Recent failures in two Bell company telephone systems are not completely understood as of this writing. Although no one has suggested those problems produced breaches of privacy, they prove that the unexpected — things that "can't happen" — do occasionally happen.

So, what to do? Drive to the bank whenever you want to check your account balance? No, the U.S. telephone "system" is probably secure enough to make that kind of precaution unnecessary. But Wilder should have known better. No doubt some corporate users should, too. There are surely some communications that merit the cost of encryption or other safeguards yet don't get that treatment because users are too trusting.

"You don't know what you don't know," say the security experts, some of who would like to sell you consulting services or products based on the fear factor. But even experts with no vested interest in the topic insist that many companies are enormously exposed to electronic espionage or accidents involving complex communications systems.

In a report late last year, the National Security Telecommunications Advisory Committee, a presidential advisory group, wrote, "Many features that make the current [public switched] network excellent with respect to performance, function and cost make the achievement of high security much more difficult. To oversimplify: Open, accessible, customer-driven networks are vulnerable to penetration and software manipulation."

Anthes is *Computerworld's* Washington, D.C., correspondent.

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## Joiner, Forest enter agreement

BY ELISABETH HORWITT  
CW STAFF

Joiner Software, Inc. and Forest Computer, Inc., two IBM business partners that specialize in IBM/Digital Equipment Corp. connectivity, are getting together to mesh their respective product strengths.

Joiner's Jnet product supports two-way communications between DEC VAXs and either IBM mainframes or Application System/400s, according to Brian Koenig, a spokesman for the Madison, Wis.-based company. IBM and DEC systems can use Jnet to do remote job entry,

terminal emulation and store-and-forward transfer of files in either direction using IBM's Network Job Entry protocol, he added.

However, Joiner's real specialty is electronic mail exchange that involves translating between IBM's Officevision on an AS/400 and DEC's All-In-1 E-mail system on a VAX, Koenig said.

Okemos, Mich.-based Forest brings to the party more sophisticated peer-to-peer and program-to-program connections between VAXs and AS/400s, Koenig said.

Joiner currently uses a bisynchronous connection between the two systems,

which is less than efficient, he indicated.

Forest's Connection System makes use of IBM's PU2.1 and LU6.2 peer-to-peer Systems Network Architecture protocols to interconnect AS/400s, System/36s and System/38s with DEC VAXs, according to Forest spokesman John Enck.

Forest specializes in bidirectional virtual terminal access, file exchange and printer access, he added.

The two companies plan to do a series of joint projects to develop connections between IBM and DEC midrange systems, Koenig said. Initially, the companies plan to implement Jnet on top of Connection System so that a single gateway can support all of the above types of communications, including E-mail.

### NETWORK SHORTS

## BASF employs large ISDN

**BASF AG** went on-line earlier this month with what is said to be Europe's largest private Integrated Services Digital Network. The network, which is said to support 28,000 telephone extensions throughout the German chemical company, runs over **Northern Telecom, Inc.** Meridian 1 switches.

Meanwhile, **Siemens AG** claims to have finished installing Europe's largest private telecommunications network for **Mercedes-Benz AG**, based in Stuttgart, Germany. The network reportedly connects 33,000 stations across Europe using Siemens' Hicom switches. It supports remote terminal access and computer-to-private branch exchange applications, Siemens said.

**US West International Holdings, Inc.** and the Soviet Union Ministry of Posts and Telecommunications recently said that US West International will provide financing and operational support for three international gateway telephone switching systems in the Soviet Union.

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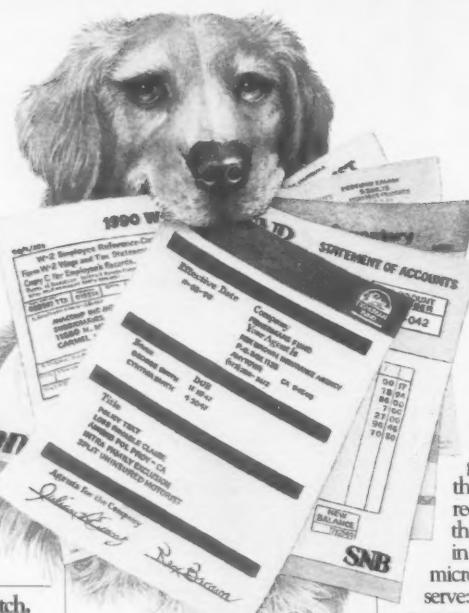


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## Apple plan

CONTINUED FROM PAGE 51

A 3270 terminal-emulation program from Apple, shipped after third-party versions shipped, Sonsini said. He uses Macmainframe, a 3270 terminal-emulation package from Avatar Corp. in Hopkinton, Mass.

"I would much rather have Apple do the connectivity," said Bob Brasington, manager of corporate information services at Richmond, Va.-based Chesapeake Corp. Brasington uses Andrew Corp.'s Tokenaxcess, peer-to-peer 5250 terminal-emulation software between the Macintosh and IBM Application System/400 midrange computers on Token Ring networks.

He said he is satisfied with Andrew's product, having watched a programmer during a recent disk drive crash "clicking through six, seven, eight sessions fixing files." Brasington said the paper-making giant is also using Apple's new software-only Snaps, which provides up to 64 advanced program-to-program communications sessions on a Token Ring network.

One IS manager, who asked not to be named, said leaving most applications development for independent firms may be a sound strategy, but it can leave standards in the lurch. He said administrators can find themselves working with a hodgepodge of software, not all of which works well together.

Even when the disparate software packages work together, Ryding said, the speed of Apple's LocalTalk network operating system — 230K bit/sec. — can frustrate users. "The biggest holdup [to easier connectivity] is crazy LocalTalk," he said.

# State school opts for frame relay

BY JOANIE M. WEXLER  
CW STAFF

LOS ALAMITOS, Calif. — State budget cutbacks and saturated data networks spell frame relay for California State University, reportedly the first educational institution to embrace the budding technology.

Cal State said earlier this month that it has awarded a \$1 million-plus contract to Digital Equipment Corp. for frame-relay equipment to link its statewide campus sites. The university said it is five nodes into installing 20 Stratacom, Inc. IPX frame-relay-capable T1 multiplexers, which DEC resells.

Frame relay is being investigated by many firms for quick handling of the bursts of data traffic characteristic of intercommunicating local-area networks. It offers the bandwidth efficiencies of traditional packet switching, then speeds transmissions by eliminating error check-

ing and correction overhead.

Many T1 multiplexer vendors, including Cal State bid runner-up Newbridge Networks, Inc., have announced intentions to ship frame-relay interfaces.

"The payback with the new network is that the next time we have a Network Task Force meeting, I won't get beaten up as much," said Chris Taylor, manager of the university's statewide CSUnet. Taylor explained that Cal State saw a ten-fold explosion of network traffic between 1989 and 1990 after it installed a multi-protocol router network on top of its private 56K bit/sec. Telematics International, Inc. X.25 packet-switching network. The router network links LANs to one another and to the national Internet network.

In addition, Taylor said, budget restraints now preclude scattering expensive computing resources at multiple sites. The high-quality frame-relay network, he said, allows one expensive re-



Source: Infonetics Research Institute, Inc.

source to be installed centrally and gives "local" response time to remote users.

"Funding is shrinking like crazy," Taylor said. "Having, say, databases on an IBM 3090 in one location that various sites access saves us bundles in mass storage and licensing fees."

Another Stratacom procurement last month by Chicago-based Evangelical Health Services reflected the same trend. Laboratory personnel in four hospitals and one headquarters office will access one DEC VAX for test results and other applications instead of several systems distributed at each site.

"It was more economical to buy a single software license for one hospital," said Evangelical's Leonard Nielsen, a network engineer. "Now that we have an efficient wide-area network, we save multiple site license costs."

Despite Stratacom's unique status as the only maker of frame-relay-capable multiplexers today, Cal State's choice was not a given, Taylor said, because government mandates required that he issue requests for proposals to multiple vendors and go with the lowest bid.

"Frame relay was one of our most desirable 'extra credit' items," he said, "but for political reasons, we weren't allowed to make it mandatory." He added that DEC and Stratacom worked very hard to provide the best pricing and allow him the frame-relay capability.

# High tech moves government beyond the Capital Beltway

BY GARY H. ANTHES  
CW STAFF

WASHINGTON, D.C. — Modern computer and communications systems are contributing to the decentralization of the federal government. Technology is allowing, and in some cases encouraging, agencies to locate facilities far beyond the Capital Beltway.

The Washington Post has called Sen. Robert C. Byrd (D-W.Va.) "the Pied Piper of West Virginia" and "a one-man WPA" for his successful but controversial efforts to persuade one federal agency after another to forsake the environs of Constitution Ave. for the Mountain State. Pork barrel politics may be at the heart of the moves, but technology is a cornerstone.

"New sophisticated communications networks have been put in place in our state, eliminating old terrain barriers and

creating 'super highways in the sky,'" Byrd said in a recent speech. "This new capability permits the locating in West Virginia of high-tech computer . . . jobs and programs once reserved only for metropolitan areas."

Perhaps the plumpest plum plucked by the Pied Piper so far is the Federal Bureau of Investigation's Identification Division, which will move from the J. Edgar Hoover Building in Washington, D.C., to Clarksburg, W. Va., taking with it 2,600 jobs. The new facility will house a new computer system for scanning, storing, retrieving and matching fingerprints.

FBI headquarters now receives some 35,000 fingerprint cards and 35,000 pieces of fingerprint-related correspondence by U.S. mail daily. With the new system, fingerprints scanned at law-enforcement offices across the U.S. will

come into Clarksburg over the National Crime Information Center Network. Electronic mug shots and the results of fingerprint matches will be available over the network to remote law-enforcement officers and to FBI officials in Washington.

A spokesman for the FBI said a benefit of the move will be a more stable work force. The existing facility sees a 50% turnover every four years and is understaffed by 200 people now because of recruiting difficulties. The FBI had 6,700 applicants for 250 positions at a pilot facility in West Virginia, he said.

A spokesman for the Bureau of Public Debt said two-thirds of the work force at its Parkersburg, W. Va., data center, which has been there since 1959, has more than 15 years of service with the bureau. Aided by that statistic, Byrd persuaded the bureau earlier this year to move 700 users to West Virginia, leaving less than 10% of its work force in Washington.

"The FBI move wouldn't have been possible without modern computer and communications technology," said Fred

Wood, senior associate at the U.S. Congress Office of Technology Assessment.

Wood said the pressures of traffic, air pollution and the like will accelerate the flight of government agencies to less populated areas just as technology makes that feasible. "It's time for a fundamental look at the organization and operation of the federal government in an electronic age. We've spent hundreds of billions of dollars on computers and communications over the past decade, but overwhelmingly, the government is unchanged."

For Joseph Coates, president of J. F. Coates, Inc., a Washington, D.C.-based consulting firm specializing in the future, that time may have come. "It's not unthinkable to have agency headquarters here with the functioning arms all around the country. It would be a virtual reality of centralization with a physical reality of dispersion" made possible by fiber-optic and satellite communications, he said.

According to Coates, the public would benefit as much as the federal employees as the enormous capacity of fiber optics gives people access to unprecedented amounts of information.

## Mr. Chips leaving town?

**T**he image of the government physically centered in Washington is a precomputer concept," said Alan F. Westin, professor of public law and government at Columbia University.

He said the government is moving away from a 1960s model of centralization in which big mainframes with big databases were surrounded by many users. "Now we have an array of options to design government with any degree of decision-making power at any level. Technology allows us to pursue a blend of central, regional and local government." He added that "in the next 10 to 20 years, the greatest revolution may be the access by the public to gov-

ernment information, no matter where the information is located."

In a recent report from the Office of Technology Assessment (OTA), the congressional think tank recommended the establishment of rural-area networks (RAN). Whereas business networks are typically structured along functional lines, RANs would be organized around the geography and needs of a community and configured like campus-area networks.

The RANs would link government offices, schools, businesses, hospitals and homes and would tie into a nationwide backbone, the OTA said. They might be built around digital radio and satellite technology, whose costs are relatively insensitive to distance.



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## NEW PRODUCTS

## Network management

Silicon Graphics, Inc. has enhanced its Netvisualizer network monitoring and diagnostic software.

Version 1.1 supports additional network protocols, including Digital Equipment Corp.'s Local Area Transport, Apple Computer, Inc.'s Appletalk and Simple Network Management Protocol. It also provides accounting reports for individual network nodes and new automatic alarms.

Netvisualizer 1.1 runs on the company's Iris four-dimensional workstations. A centralized version license costs \$8,000.

A remote version costs \$1,200 for the initial license and \$1,000 for additional licenses. Upgrades from Version 1.0 are free of charge.

**Silicon Graphics**  
2011 N. Shoreline Blvd.  
Mountain View, Calif. 94039  
(415) 960-1980

Progressive Computing, Inc. has introduced a \$995 protocol analyzer.

The Serialtest Sync software package runs on personal computers and analyzes synchronous data communications including Synchronous Data Link control, High-Level Data Link Control and X.25 protocols.

The program offers context-sensitive help and is menu-driven.

A Bit-Error Rate Test option costs \$395.

**Progressive Computing**  
Suite 101  
814 Commerce Drive  
Oak Brook, Ill. 60521  
(708) 574-3399

Sophco, Inc. has unveiled a product for remote management and diagnosis of personal computers.

Offsite is made up of a Commander module and a Receiver module and offers capabilities such as file transmission and retrieval; configuration and memory mapping for remote systems; and remote keyboard, screen and printer sharing.

It includes a database of information on client systems.

The central Commander module is priced at \$295. Receiver modules cost \$95 each.

**Sophco**  
Building B  
4730 Walnut  
Boulder, Colo. 80306  
(303) 444-1542

## Micro-to-host

Digital Communications Associates, Inc. recently announced Crosstalk for Windows Version 1.2.

The enhanced version offers additional network support and VT220 and VT320 terminal emulation. It also includes Ymodem-G support, allowing faster data transfer for users with error-correcting modems.

The installation procedure has been streamlined as well.

The product costs \$195 or \$49 for an upgrade from previous versions.

**Digital Communications Associates**  
1000 Alderman Drive  
Alpharetta, Ga. 30202  
(404) 442-4095

The Wollongong Group, Inc. has extended the capabilities of WIN/TCP for VMS, a software package providing connectivity between Transmission Control Protocol/Internet Protocol networked users and Digital Equipment Corp.'s VAX and Microwax systems.

Release 5.2 of the software includes a high-speed Message Transfer Agent for VMS mail systems and several other features previously offered as options.

Pricing ranges from \$1,000 to \$40,000, depending on platform.

**The Wollongong Group**  
1129 San Antonio Road  
Palo Alto, Calif. 94303  
(415) 962-7100

Ideassociates has introduced a software product, Ideacomm 5251 for Windows, that provides terminal emulation and file transfer facilities for personal computers running Microsoft Corp.'s Windows 3.0.

The product supports communications with IBM Application System/400 and System/36 and System/38 midrange computers.

It requires the Ideacomm 5251 communications add-in card, which works with the company's 5251 software for DOS and OS/2 systems as well.

The product with the adapter card costs \$395.

**Ideassociates**  
29 Dunham Road  
Billerica, Mass. 01821  
(508) 663-6878

## Links

Digital Data Systems, Inc. has introduced the Epic Laserfax, a product that receives fax transmissions and prints them on any Hewlett-Packard Co.-compatible printer.

Epic Laserfax prints documents in real time at normal fax speed. It can also share voice phone lines and requires no software.

The product costs \$499.

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# MANAGER'S JOURNAL

## EXECUTIVE TRACK

**James R. Chambers** has been named vice president of information services at the **Nabisco Biscuit Co.**, an East Hanover, N.J.-based, \$2.7 billion operating company of Nabisco Brands, Inc.

Chambers, 33, had been a category business director at Nabisco Biscuit since 1989. He joined the company in 1981 as a cost/economic analyst and became a senior director of sales operations in 1986.

Chambers holds a bachelor's degree in civil engineering from Princeton University and an MBA from the Wharton School of Business at the University of Pennsylvania.

**B. Michael Gerringer** was named head of the combined operations and information services unit at **Mercantile Bancorporation, Inc.**, a \$7.4 billion bank in St. Louis.

Gerringer, 36, was most recently a vice president at Security Pacific Automation Corp. in Los Angeles. He joined Security Pacific in 1984. Before joining Security Pacific, Gerringer worked for six years in information systems-related positions at Hughes Aircraft Co. and Rockwell International, Inc.

Gerringer reports to Mercantile Chairman and Chief Executive Officer Thomas H. Jacobsen. John H. Lee, senior vice president of information services, remains with the company and reports to Gerringer.

**Darryl Skoog**, managing director of systems integration at **Federal Express Corp.** in Memphis, has been temporarily assigned to the new position of managing director of information and telecommunications tactical teams in Europe and Africa.

Skoog is based in Brussels until the summer of 1992. He is responsible for automating and integrating disparate Federal Express systems on the two continents, primarily in Brussels, Paris, Milan and Nuremberg, Germany.

JULY 22, 1991

## Paper pushers recycle IS

*International Paper melds 25 acquisitions into centralized operation*

BY JOANIE M. WEXLER  
CW STAFF

**D**espite being big, blue and centralized, International Paper Co.'s recent acquisition binge and subsequent data center consolidations have created what director of information services and Vice President Karl Moore describes as "the biggest managerial challenge I've seen in 31 years."

The \$12 billion Memphis-based firm is largely snubbing the downsizing trend with a centralized internal staff and an IBM bent as it continually copes with blending corporate cultures and parochial computing conventions into a 400-person department.

For example, it reinforced its mainframe vows in May when it powered up a new Enterprise System/9000 Model 720, replacing two 3081s and one 3084 and bringing the firm from 114 million instructions per second (MIPS) of computing power to 175 MIPS.

The reason was the need to consolidate data from the 25 companies the firm has scooped up since it acquired paper manufacturing giant Hammermill Paper Co. in 1986, as well as to satisfy an increasingly computer-literate work force, Moore says.

"I hate to say our future will be IBM, though that has been our direc-

tion, and I don't see it changing. We're sticking with mainframes," says Jerry Williams, telecommunications manager at International Paper. He adds, "I don't know that any of our locations have made a direct effort to downsize

tem with no existing plans to upgrade.

"Staying centralized is very unusual, although it is common to standardize on whatever platform is the most abundant in an acquisition," says Norman Weizer, a senior consultant in the information and telecommunications practice at Cambridge, Mass.-based consultancy Arthur D. Little, Inc.

In 1986, Hammermill ran data centers in Pennsylvania and Wisconsin, and International Paper operated data centers in New Jersey and Alabama. Two years ago, the physical merging of all four into the Memphis headquarters took place, although until recently, they continued to run under one roof.

This year, efforts kicked in to merge the disparate operating systems, databases, applications, networks, naming conventions, tape drives and security systems. The moves have paid off to the tune of a near-\$6 million annual budget reduction, Moore says, because of the elimination of duplicate resources.

"We spent 1990 just learning what we had," says Jerry Upchurch, computer center manager. "Where we could upgrade to common equipment and operating system versions, we did so. But we had to change every data set name and job name to comply with International Paper standards."

To that end, the firm established a

*Continued on page 60*



David Smart

**International Paper's Moore** says data center consolidation has cut the firm's IS operating budget

onto [local-area networks], though many LANs exist."

Williams says the company primarily runs the 6-year-old IBM Personal Computer network LAN operating sys-

## Memo billing the right ticket at Amtrak

BY MITCH BETTS  
CW STAFF

**U**ser departments rarely have the foggiest notion of how much it costs to provide the mainframe computer services they request from the information systems department. The result is that user demands for large amounts of storage space, faster response time or "nice-to-have" software enhancements may not be cost-justified.

That situation has led the Washington, D.C.-based National Railroad Passenger Corp., better known as Amtrak, to implement a strategy called "memo billing" to help educate managers and set priorities for IS projects.

With memo billing, the user departments do not actually pay the bill, as they would in a full-fledged chargeback operation. Amtrak seriously considered implementing a chargeback sys-

tem several years ago but ditched the plan when it found that chargeback would mean adding a full-time staff to maintain it, according to Bradford M. Burch, manager of service management in the IS department.

However, the memo billing system rolled out this year is so fully automated that it takes only 30 minutes to produce the quarterly reports, Burch said



at a recent chapter meeting of the Association for Systems Management. In essence, memo billing produces most of the benefits of chargeback but at a much lower cost, he explained.

In addition to teaching departmental managers that computer resources are

not free, memo billing reaches the company's top executives, who can incorporate the data into the company's regular quarterly business reports. "It's the beginning of an executive information system," Burch said.

He added that memo billing has been a "huge eye-opener" for the IS department, which gets a clearer picture of mainframe users and can use the figures to help set priorities on what new IS projects to undertake. For example, the system can project how much money would be saved by streamlining an old, computer-hogging application or how much a new application will cost downstream, Burch said.

The system takes statistics on the mainframe resources used by various applications and feeds them into a spreadsheet and graphics presentation packages.

The critical variable, however, is determining how to apportion those costs to the functional departments.

## Paper

CONTINUED FROM PAGE 59

computer center standards committee to gradually move the firm to a shared data environment. In addition, John Beckham, manager of special systems and consulting and a former independent consultant, was hired as an objective third party. His job is to create and oversee the company's plans for choosing common platforms, systems and software across the diverse businesses that International Paper has acquired.

The acquisitions include companies in the paper distribution, imaging products and Masonite businesses. While over 60% of those businesses were also IBM-based,

Moore says, diverse platforms from Data General Corp., Digital Equipment Corp. and Wang Laboratories, Inc. also existed.

Until now, the diversified businesses have been running autonomously, and International Paper wants to integrate them into the entire IBM computing infrastructure for operational savings and more comprehensive management.

Since International Paper's roots are as a paper manufacturing company, however, "our mentality was along those lines," Moore says. Without Beckman's fresh perspective, Moore says, the company might have installed "cost systems that we run in our mills that might not have those other businesses." Most International Paper sites report financial data daily to the Memphis data center,

where each location's receipts are consolidated on one balance sheet every fourth workday following the end of the month. Plans to standardize on a server platform for communicating with the centralized boxes — probably the Application System/400 — should facilitate that, Moore says, because "we won't need varying forms of connectivity and have to maintain different platforms."

On the personnel front, Moore's decision to hire outside firm Atlanta Consulting Group to conduct its workshop on Planning for Inspired Performance when consolidating the Hammermill operation was "the most productive thing we've done since I've worked here."

"We emerged from the program as a cohesive group," Moore says, with time

frames set for having a specific set of IS skills in place in the department and a January 1993 deadline that IS consistently provide quality products and services that meet or exceed customer expectations.

Over half of Hammermill's IS staff stayed behind when its data centers were shipped to Memphis in 1989. The new entity hired 160 people, though it reduced overall head count, in part, by promoting technical people into managerial roles.

The job transitions were eased by the Quality International Paper Program, initiated by the company's chairman in 1984. The program, run by dedicated full-time staff, provides ongoing training and pushes the concept of quality in management, technology, leadership and team-building across departments.

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## Blue horizon

Information services executives at International Paper say they are not overly concerned at this point with open systems because they've chosen IBM as their own internal standard. They tend to convert platforms and operating systems to those already most abundant.

"It's awfully easy to focus on what's already there," says John Beckham, manager of specialty systems and consulting. "The horizon looks very blue both inside and outside at International Paper."

International Paper, however, is not unique in its lack of emphasis on open systems. A survey of nearly 400 U.S. information systems executives by Cambridge, Mass.-based research firm CSC Index, Inc. last fall revealed that 47% do not plan to move to nonproprietary platforms over the next two to three years.

Another reason for International Paper's consistent IBM flavor and centralized strategy: It works. A comparative analysis of the firm's data center efficiency conducted by Real Decisions Corp. in Darien, Conn., revealed that the shop is operating very lean and mean relative to the other 150 large companies Real Decisions has in its database.

"We currently have about 85 people in the data center vs. an average of 120 employees for a shop our size," says Karl Moore, vice president and director of information services.

Real Decisions Executive Vice President Len Bergstrom points out, however, that his firm's benchmarks have traditionally evaluated centralized shops only. The International Paper study would have compared the efficiency of its data center to other centralized data centers only, not to companies distributing their resources.

"Many companies remain centralized," Bergstrom says. "However, the return on adding computing power or consolidating data centers does tend to level off at about 200 [million instructions per second]."

JOANIE M. WEXLER

## MANAGEMENT SHORTS

**CSC Index takes leap with Quantum**

**CSC Index, Inc.** has announced the first two offerings of its new Center for Re-engineering Leadership. **Quantum** is a research and advisory service limited to 40 member organizations and designed to help senior executives understand and practice business re-engineering. The service will offer focused research, interactive meetings and reports.

The center will also offer a three-day course entitled **Re-engineering: The Executive Perspective**. The course, limited to 30 executives per session, will be offered in September, October, November and December.

The course is intended to offer senior business executives a substantive view of the methods and results of process redesign and change management.

The center is a joint venture of CSC Index and consultant Michael Hammer. CSC Index is located in Cambridge, Mass.

Temporary-personnel company **Uniforce Temporary Services** in New Hyde Park, N.Y., has formed a new MIS division. The division will provide temporary programmers, systems analysts, local-area network specialists and technical writers to business, industry and government offices nationwide. MIS assignments are typically long term, lasting up to one year or more. Uniforce operates 97 offices across the U.S.

**Edgar S. Woolard Jr.**, chairman and chief executive officer of **Du Pont Co.** in Wilmington, Del., has received the 1991 Outstanding Achievement in Management Award from the **Institute of Industrial Engineers**. The award recognizes executives who have significantly contributed to the industrial engineering profession.

**Texas Instruments, Inc.**'s plant in Johnson City, Tenn., won the 1991 award for Excellence in Productivity Improvement. The award honors achievements that have increased productivity, eliminated human drudgery and improved the quality of working life.

Other 1991 awards included the following:

- The Frank & Lillian Gilbreth Industrial Engineering Award went to **A. Alan B. Pritsker**, president of **Pritsker Corp.** in West Lafayette, Ind.
- The Honorary Member Award was received by **Roy H. Ekrom**, president and chief executive officer of **Allied Signal Aerospace Co.** in Torrance, Calif.

**The Society for Imaging Science and Technology** has

issued a call for papers for its 45th annual conference, **Imaging '92**, to be held May 10-15, 1992, at the Meadowlands Sheraton Hotel in East Rutherford, N.J.

The central theme of the conference is emerging technol-

ogies for the year 2000. Abstracts of 100 to 200 words should be sent to publication chairman Richard Goodman, Polychrome Corp., Box 817, Yonkers, N.Y. 10702.

The fax number is (914) 965-5783. The deadline for re-

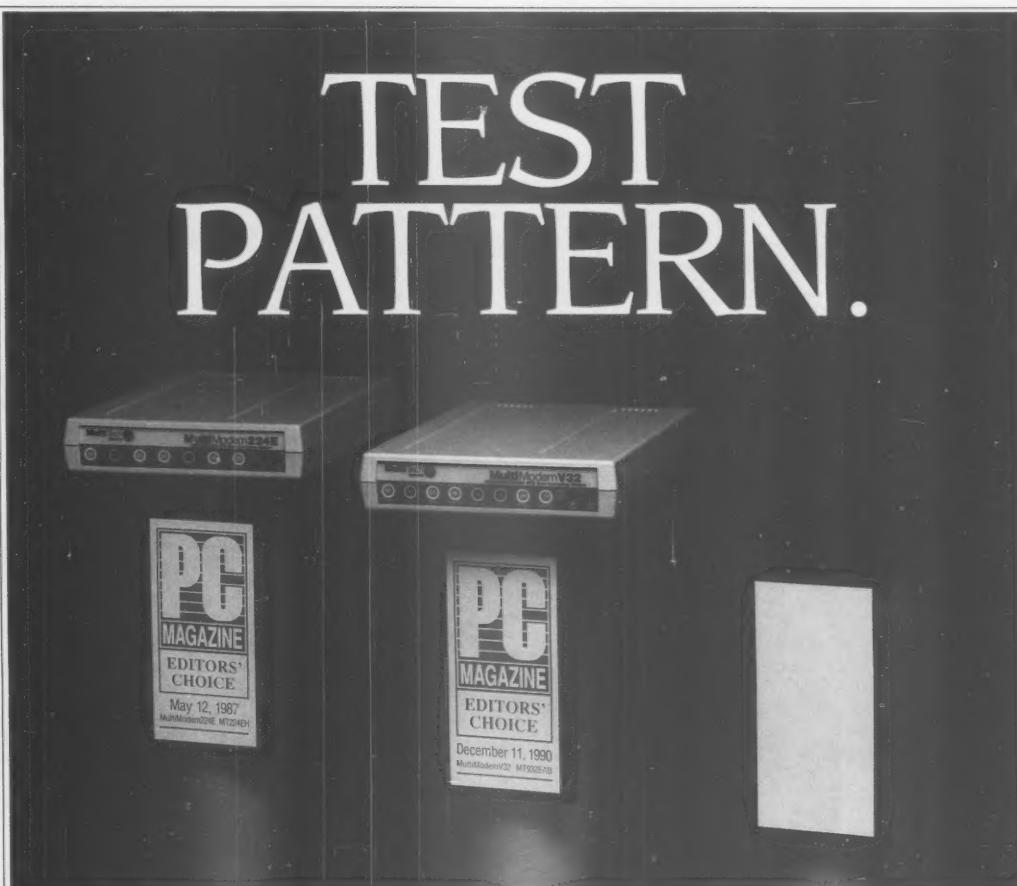
ceipt of applications is Oct. 9.

A VDT ergonomics panel will be included in the 35th annual meeting of the **Human Factors Society** to be held Sept. 2-6 in San Francisco.

The panel will focus on the design guidelines of the San Francisco VDT worker safety ordinance, which is the first of its kind in the U.S. The controver-

sial ordinance, which went into effect last January, specifies VDT safety guidelines for all public and private San Francisco-based businesses and is considered a possible model for other jurisdictions across the U.S.

The conference is sponsored by the **Human Factors Society** annual meeting office, P.O. Box 16502, Irvine, Calif. 92713.



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PC Magazine, 12/11/90 (Ziff-Davis Publishing) "9600-BPS MODEMS: Breaking the Speed Barrier." PC LAN Labs tests seven rapid-fire modems complying with V.32, V.42 and V.42bis standards."

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## COMMENTARY

**Susan Cramm and Thornton A. May**

## IS manager: Heal thyself

At a recent conference, retired Bergen Brunswig Chief Information Officer Tony Vallario counseled 50 CIOs that the greatest challenge facing technology managers today is their inability to admit their own mental obsolescence. We would go so far as to say that the vast majority of IS management troubles are psychosomatic. Data processing has become a profession of whiners and self-appointed victims.

How many times have you heard IS professionals complain that their users don't understand them, that they have 20 years of backlog, that they are not involved early enough in key decisions, and they have limited stature because they report through finance or administration?

We need to develop a new paradigm regarding who we are and what we do—and that requires abandoning old behaviors.

Truly progressive IS organizations do not focus on the applications backlog. What purpose does a backlog serve? Few business executives are moved to expand funding levels on the basis of a backlog list. We live in a culture that funds success, not failures. The backlog in many mainstream organizations is a sham, a shallow pretense to give managers a chance to input and then frustrate them by effectively ignoring the request.

**W**E NEED TO develop a new paradigm regarding who we are and what we do.

The biggest challenge standing in the way of realizing the full impact of information technology investments revolves around infrastructure funding. To date, the IS organization has failed to be able to articulate the specific value that the infrastructure provides.

Three broad functions must be attended to for successful management of IS assets: knowing one's business, monitoring available technology and implementing appropriate technologies.

In progressive organizations, there are no users, only clients. IS should help business managers "live in the future for a day" — jump outside the barriers of the status quo and envision what could be. The IS organization can establish itself as a test bed for rethinking the business. We believe a central function of management in the progressive IS organization is to redefine frontiers — which frequently results in the added benefit of creating demand for new technology.

Many in the profession today bemoan the fact that they are not asked to participate in the process of setting strategic direction or planning business changes.

That's ridiculous — try to imagine a world class outside service provider that waits for the client to call. The client has a business to run. The role that the IS organization plays in supporting that business can range from the strategic (direction setting) to the mechanical (order taking). Where the organization sits on that spectrum is a function of its credibility and capability.

Simply reporting to the chief executive officer is not going to change the environment. The CEO or president will elevate the function to the executive committee level only if it is clear that technology not only enables strategy execution but can actually shape the formulation of strategies.

Building IS organizational stature is

based on viewing IS not as another staff function but as an internal vendor of professional services. Recognize that your products are not only systems, but people and expertise. IS champions have succeeded in courting executive attention when they demonstrate value along the following problem areas:

- Executives operating off of inappropriate media.
- Executives lacking the operational information they need to manage.
- Deteriorating customer service.
- Unleveraged employees.

This process starts with a change in you. Mentally fire yourself from your old job and hire yourself as the leader of your company's new internal "IS consulting practice." Take some sales courses and

buy some new suits. Formulate a strategic IS plan.

Your job is to create windows of opportunity for your organization to demonstrate the impact of IS on the business. Delivering quickly in high-impact areas will create an understanding of the potential of technology. This will (slowly) move your organization to the "in crowd" and motivate clients to get you involved up front. Your organization will have influence, funding will become easier, and your organization will be energized by the positive client feedback and newfound stature.

Cramm is divisional IS manager at Taco Bell Corp. in Irvine, Calif. May is director of imaging research at Nolan, Norton & Co. in Lexington, Mass.

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## BOOK REVIEWS

**IS insight without technical jargon****How to Succeed in the Information Systems Profession: 10 Personal Success Factors**

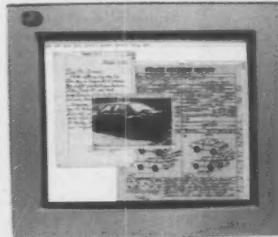
By Morrison W. Hewitt

*Whitney House Publishing, Inc.*, \$19.95

How-to books about becoming an information systems professional are as numerous as the veterans who want to share their experiences. However, Morrison Hewitt's effort stands out from the pack for its clarity and readability.

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Projects that used to take weeks to close, now can take hours.

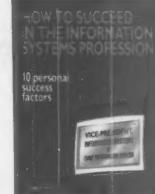
Based on his 35 years of experience in IS positions ranging from manager to consultant, Hewitt's 263-page book offers insights that allow the reader to peek behind the profession's curtain of technical and managerial jargon and get a feel for the real world of IS.

The presentation is loosely based on MIT Professor John Rockart's notion of Critical Success Factors, which identify key tasks an organization must do to be successful. Hewitt theorizes that IS professionals have similar "must dos," which he calls Personal Success Factors. The 10 areas he identifies are divided into three strategic and seven

tactical roles.

Hewitt's structure works well as an underpinning for the lively mixture of commentary and fact that fills each chapter. For example, one of the strategic Personal Success Factors is called "The Organization Man." In addition to explaining the various roles of IS professionals in different organizational models, Hewitt relies on his intuitive understanding of the business to explain the strengths and weaknesses of each model.

Unfortunately, the book's structure also requires Hewitt to expound on areas where he has less to say beyond the standard lines found in most books of



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this type. For instance, the chapter on becoming a vice president of IS is a scant four pages with little more than statements that say in sum, "To be an IS vice president, act like one." The reader is left with the unanswered question of just how this is accomplished.

The work's other major flaws are the amount of text devoted to summarizing what is about to be said and a 45-page set of chapters on IS history. While Hewitt has some insightful comments to add about historic periods, the reader is left wondering when he will dig into his subject. The historical segment might have been more useful as an appendix, rather than occupying the first half of the book.

MICHAEL L. SULLIVAN-TRAINOR

**The Customer Driven Company:****Moving from Talk to Action**

By Richard C. Whiteley

*Addison-Wesley*, \$21.95

A basic business axiom that is constantly drilled into the heads of information systems professionals remains fundamental: No matter how alluring the products your company markets, it still takes customers to make a business thrive. Whiteley's book does not let the readers forget it.

Because we are in an age when treatment of customers is often as important as the quality of the products and services they are buying, businesses need to realize that they need to entice customers with their wares, then delight and captivate them with their service.

Author Whiteley, co-founder of The Forum Corp., a consulting firm with more than 20 years of experience in customer focus research, does not just preach theories; he gives the reader precise plans of action to follow.

In almost textbook form, Whiteley takes the reader step-by-step through each overhaul that needs to be performed to focus every department on serving the final customer. Research documented in the book's final 80 pages backs up all of the author's conclusion.

Interestingly, the reader has a choice of how to read this book: One is to start at Page one, and then take the included self-test at the end. The second is to use the book as a tool and complete the self-test to help discover the weak spots within your firm and read only those chapters that will help in the improvement.

KEVIN BURDEN

**Managing Microcomputer Technology as an Organizational Resource**

Edited by Mehdi Khosrowpour

and Donald Amoroso

*Idea Group Publishing*, \$47.50

Most academic essay collections should stay on the library shelf, but *Managing Microcomputer Technology as an Organizational Resource* actually deserves a read. Written in a straightforward style that IS managers will find easy to read, the various essays make good points on a variety of topics, including strategic use of microcomputers, problems and solutions for managing microcomputers, remembering the end user and selecting software.

Despite being oddly dated—the research stops with 1989, and some essays refer to concluded events in the future tense—this book offers a solid and forward-looking compendium of research and real-world advice.

MICHAEL FITZGERALD

## CALENDAR

AUG. 11-17

AUG. 18-24

**Manufacturing Networks Conference.** Chicago, Aug. 12-13 — Contact: Digital Consulting, Inc., Andover, Mass. (508) 470-3880.

**Windows and OS/2.** Boston, Aug. 14-16 — Contact: CM Ventures, Emeryville, Calif. (415) 601-5000.

**Share 77.** Chicago, Aug. 18-23 — Contact: Share Headquarters, Chicago, Ill. (312) 644-6610.

**MIS Training Week West '91.** San Francisco, Aug. 19-23 — Contact: Pamela Bissett, MIS Training Institute, Framingham, Mass. (508) 879-7599.

**The Santa Cruz Operation Forum '91.** Santa Cruz, Calif., Aug. 19-23 — Contact: The Santa Cruz Operation, Santa Cruz, Calif. (408) 425-7222.

**Fed Micro.** Washington, D.C., Aug. 20-21 — Contact: National Trade Productions, Inc., Alexandria, Va. (703) 683-8500.

AUG. 25-31

**Surface Mount International Conference and Exposition.** San Jose, Calif., Aug. 25-29 — Contact: Miller Freeman Expositions, Boston, Mass. (617) 232-3976.

**International Security Conference.** New York, Aug. 27-29 — Contact: Cahners Exposition Group, Des Plaines, Ill. (708) 299-9311.

**Database and Expert Systems Applications.** Berlin, Germany, Aug. 28-30 — Contact: Dimitris Karagiannis, Ulm, Germany (011-49) 37-150-1540.

**Advanced Communications Technology Satellite Program.** San Jose, Calif., Aug. 29-30 — Contact: Mary B. Gibbs, Public Service Satellite Consortium, Arlington, Va. (703) 979-0801.

SEPT. 1-7

**Very Large Data Bases.** Barcelona, Spain, Sept. 3-6 — Contact: VLDB '91-Difusora de la Informatica, SA, Barcelona, Spain (011-34) 3-418-8067.

**HD World.** San Francisco, Sept. 4-6 — Contact: Meckler Conference Management, Westport, Conn. (203) 226-6967.

**Unix Open Solutions '91.** San Jose, Calif., Sept. 4-6 — Contact: Unix Open Solutions '91, Needham, Mass. (617) 449-8938.

SEPT. 8-14

**Managing the Move to Workstation-Based Development — The Wave of the '90s.** San Diego, Sept. 8-11 — Contact: Development Center Institute, Inc., Indianapolis, Ind. (317) 846-2753.

**Disaster Recovery Symposium and Exposition.** Atlanta, Sept. 9-11 — Contact: Disaster Recovery Journal, St. Louis, Mo. (314) 846-1801.

**Symposium on the Computerization and Use of Materials Property Data.** Cambridge, England, Sept. 9-11 — Contact: Teresa Cendrowska, ASTM, Philadelphia, Pa. (215) 299-5546.

**Digital Equipment Computer User Society (DECUS) Europe Symposium.** The Hague, Sept. 9-13 — Contact: DECUS Europe, Petit-Lancy, Switzerland (011-41) 22-709-4264.

**Data Storage.** San Jose, Calif., Sept. 10-12 — Contact: Forum Management, Cartridge and Associates, San Jose, Calif. (408) 554-8544.

**Downsizing Expo.** Los Angeles, Sept. 10-12 — Contact: Digital Consulting, Inc., Andover, Mass. (508) 470-3880.

**Government Neural Network Applications Workshop.** Huntsville, Ala., Sept. 10-12 — Contact: Rene Kirkwood, U.S. Army Research Office, Research Triangle Park, N.C. (919) 549-0641.

**Information Highways: Linking America for Interactive Communications.** New York, Sept. 11-12 — Contact: Business Week Executive Programs, New York, N.Y. (212) 512-2184.

**ABCD: The Microcomputer Industry Association's Breakaway '91 Conference.** Atlantic City, Sept. 11-13 — Contact: Deborah Keating, ABCD, Ridgefield, Minn. (601) 977-9033.

**Info MIS, The Information Management Exposition and Conference.** New York, Sept. 11-13 — Contact: Leslie Livingston, Cahners Exposition Group, Stamford, Conn. (203) 352-8443.

SEPT. 15-21

**International Electronics Packaging Society (IEPS) Conference.** San Diego, Sept. 15-18 — Contact: William Ashman, IEPS, Wheaton, Ill. (708) 260-1044.

**Data Administration Management Association International Symposium.** Seattle, Sept. 16-17 — Contact: Bill Harenburg, Triad International, Los Angeles, Calif. (213) 622-00123.

**Effective Methods for Information Systems Quality Assurance.** Orlando, Fla., Sept. 16-18 — Contact: Quality Assurance Institute, Orlando, Fla. (407) 363-1111.

**Auto-Tech '91.** Detroit, Sept. 17-19 — Contact: Automotive Industry Action Group, Southfield, Mich. (313) 358-3570.

**CASE Conference: Rebuilding for Software Automation with the 40s of CASE.** San Francisco, Sept. 17-19 — Contact: Extended Intelligence, Inc., Chicago, Ill. (312) 346-7090.

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# PRODUCT SPOTLIGHT

## Executive Information Systems

*LAN-based EISs are all the rage, but unless you plan carefully, they can fall under the weight of burgeoning databases and user populations*

BY MARY BRANDEL

**A**t Lockheed Aeronautical Systems Co. in Marietta, Ga., executives and middle managers love the fact that up-to-the-minute corporate data is delivered to their personal computers. They love the way it appears in a readily understood format. The only thing they don't love about their executive information system (EIS) is the five to 15 seconds it takes to call up a display.

For their part, the IS department isn't so thrilled with the expense of maintaining the in-house-built, host-based EIS. Not only does the system rely on technology so out-of-date that it borders on being unmaintainable, but the department also requires people skilled in expert systems to keep it running.

Any time a user wants to change a screen format or report structure, it's just another entry on a long list of requests. Considering the fact that the system delivers from 70 to 100 screens per day pertaining to safety, quality, manufacturing and financial data, that's an entry the IS department doesn't need.

Lockheed is hoping to turn both of these tides when its new EIS is implemented — this time, on a local-area network with an off-the-shelf package, Comshare, Inc.'s Commander EIS.

### Speed needed

"We required a LAN for speedy delivery," says Don Woodward Jr., information services technologist at Lockheed. "There's a significant increase between updating the executive PC from a file server as opposed to a host. On our current system, it could take 30 seconds to download one screen." Woodward says he also expects to greatly reduce his

maintenance and support costs.

Many IS managers are being lured by LAN-based EISs, according to a recent report from Pizzano & Co., a market research firm in Cambridge, Mass. According to the firm, 48% of 132 current EIS users said they were turning their attention to LANs; 12% are contemplating mainframe purchases or improvements.

In addition, all of the major EIS

clude promises of reduced maintenance, easier implementation and faster response time. However, economics is the biggest reason for the downsizing move.

Business Intelligence Ltd., a research and information company in London, recently compared the costs of two EIS implementations of similar project duration (12 to 14 months) and number of users (10 to 12 users). The LAN-based implementation

of Rockwell International Corp. in Cedar Rapids, Iowa, "We call our system 'EUIS,' or 'end-user information system,'" says Dan Kiesey, manager of EIS/microcomputer systems.

Using a PC-based product from a major vendor, Collins Air Transport wants its professional programmers to work on new development and its end users "to develop much of their own applications in a point-and-click approach," Kiesey explains.

The choice of languages ranges from purely object-oriented, as in Pilot's Lightship, to a combination of text and icons, as with Comshare's Commander.

### Costs add up

Just because an EIS is LAN-based does not guarantee a cheap system, however. For one thing, once you add in hardware, personnel, training, consulting and ongoing costs, you're looking at an expenditure of about \$100,000 (see story page 70).

In addition, not all LAN-based packages are suitable for all organizations. You may start out spending very little, but as the system grows, the cost gap between host-based and LAN-based EISs may narrow.

The most important thing to realize when shopping for one of these packages is the wide range of functionality available in the software. Traditional mainframe packages offer total EIS functionality — including the graphical user interface, executive database and tools for developing applications and building screens — in one very expensive package, usually reaching the \$100,000 range.

There are also LAN-based packages that offer a full set of EIS functions, including those from Comshare, Epic Software, Information Resources and IBM. Because these packages provide links into the host database (some even require a mainframe version of the software), they too can be pricey, although ongoing costs may not be as high as the host-based packages.

*Continued on page 68*



Ellen Weintraub

vendors have sensed the appeal of smaller platform EISs. Pilot Executive Software and Comshare — the top contenders in the EIS marketplace (not to mention noted mainframe diehards) — now market LAN-based EISs, as do IBM, Epic Software, Inc., IMRS Co. and Information Resources, Inc.

Reasons for the attraction in-

was less expensive than the host-based system by about 46%.

A big reason for the diminished maintenance and support costs on LAN products is that much of the responsibility for applications development is pushed down to the end users, with much less dependence on IS.

At Collins Air Transport Divi-

### INSIDE

#### Price Factor

No matter which you choose, EISs are expensive. Page 70.

#### Buyers' Scorecard

Pilot Executive Software's product tops user ratings. Page 72.

#### Product Guide

A comprehensive listing of current EIS packages. Page 74.

Brandel is a Computerworld senior editor, product spotlight.

Continued from page 67

The newest and lowest cost trend, however, is for LAN-based vendors to bundle much of the EIS' functionality and offer just a PC-based EIS engine, which creates the graphs and performs functions such as exception reporting and drill-down. These products typically cost in the mid-hundreds of dollars, but it is up to users to purchase the graphical user interface, database and applications development and screen-building tools from third parties.

"The general thinking for a LAN-based EIS company is to provide some kind of graphical interface to databases and let secondary companies fill in the holes," says Thomas E. Doyle, vice president at The Lehmann Group, a consulting

### How to determine EIS functionality

- Quality of user interface.
- Flexible, intuitive navigation of reports.
- Ad hoc reporting.
- Flexibility and quality of (integrated) graphics.
- Easy-to-use data analysis tools.
- Ability to access external data.
- Electronic mail with executive information systems users and corporate systems.

Source: Business Intelligence - London

firm based in New York.

For instance, Pilot's Lightship, which sells for \$795, provides a Microsoft Corp. Windows-based graphical front end through which users can access data from other PC applications. The product does offer an object-oriented applications development language, but in order to build screens, you need to purchase Information Builders, Inc.'s Focus or Easel.

Although consultants generally discourage people from building EISs completely from scratch, they look favorably on the unbundled option.

"You need to ask, 'What do we really want to give the executive?'" Doyle says. "Rather than the whole suite of tools, you may find the scaled-down LAN products fit your needs. As micro players develop

slick interfaces to server databases and as specialized companies develop applications to work across network environments, you'll find the sheer cost of developing applications, purchasing hardware, staffing and maintaining a lot less in LAN-based."

The cost benefits of these lower cost LAN products diminish, however, once you get into large user populations. Sure, you can add more file servers to the LAN to accommodate a larger store of data. But that will just increase the time it takes to update EIS data because each file server must be treated separately.

Sticking with a small user population is just fine for many companies. The trend today is for EIS use to trickle down from

Continued on page 71

## Thinking About EIS? Think Twice.

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\*David W. DeLong, co-author of "Executive Support Systems: The Emergence of Top Management Computer Use." ©1991 Express/EIS is a registered trademark of Information Resources, Inc.

## Keep in mind

BY M. J. RICHTER

**A**fter you've deliberated for weeks and maybe months over which EIS software to buy, here's something you probably don't want to hear: The software won't guarantee a successful implementation.

"Take two guys with exactly the same software package who spend exactly the same amount of money on exactly the same computer environment. One has a great success and one has a great failure," says Alan Paller, president of AUI Data Graphics, a market research division of Computer Associates International, Inc.

"We see almost no sign that the success of the project correlates with the choice of product," agrees Ian Meiklejohn, director at London-based Business Intelligence Ltd. However, he adds, "that doesn't say that some products are better than others for certain requirements."

Paller says you should also consider the following questions:

- Do you know precisely what business payoff you will reap from investing in an EIS and how it will affect the bottom line, your client relationships and your growth?
- Do you have a driver as well as a sponsor? While the sponsor is an executive-level person who champions the project, the driver is responsible for the actual implementation of the system.
- Does the driver have senior management's confidence?
- Do you personally want to work 18 hours a day for the next six weeks to six months?

If an organization cannot answer all of the above questions in the affirmative, it should avoid an EIS altogether, Paller warns.

For those that have answered yes to all of the questions, he suggests finding another company that has a working EIS and similar hardware and software architectures.

"You want to find a model that others have already used," he says, "so that you not only get the software but a mentor to go with it."

Richter is a free-lance writer based in Arlington, Va.

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\*Computer Intelligence, La Jolla, CA.

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# Expensive to implement, costly to develop and maintain

BY HUGH WATSON

No matter how you implement it, an executive information system (EIS) is always going to be expensive.

Not only do you need to account for hardware, software personnel and training for the initial implementation, but you also have to maintain and develop the system.

As the system inevitably grows, so do the ongoing costs for all of those categories.

Nevertheless, costs do vary, depending on a number of factors:

- **Hardware costs.** These are very dependent on the organization's existing architecture. If all the users — executives and managers — already have networked personal computers on their desks, there may be very little need to buy or upgrade hardware.

**A**S THE SYSTEM inevitably grows, so does the cost of hardware, software, personnel and training.

- **Software costs.** Your choice of whether you use a full-function, vendor-supplied package or partially or completely custom-built software has a dramatic effect on costs.

While most people custom built EISs before the mid-1980s, it turned out to be a very expensive undertaking that most firms avoid today.

It is less expensive to purchase tools such as screen designers and friendly interfaces and build an EIS in modular fashion. This is an attractive approach if there are pressures to keep costs down or if many of the pieces for an EIS are already in place. It is also optimal if executive support is weak.

Full-capability, vendor-supplied software provides all of the tools needed to develop an EIS. While these products resolve most of the technical problems associated with developing an EIS, they do result in software costs over \$100,000.

- **Personnel.** While the average number of employees on the EIS support staff is three or four, it may be larger, depending on the number of users supported and the amount of customization necessary.

The organizational structure for the support group influences how its costs are charged. Some groups are highly centralized and perform all EIS services; consequently, their costs are easily associated with the group.

A growing number of organizations have a small central staff with other personnel scattered throughout the organization who have a "dotted-line" relationship to the central group. These staff

members perform EIS services — such as identifying information requirements — on a part-time basis.

Because this staff's primary responsibilities are not EIS-related, their salaries are not usually carried on the books as EIS costs.

- **Training.** These costs should be low. If an EIS requires a user to spend more than 15 minutes learning the basic capabilities, it is probably too difficult to use.

## Cost of an executive information system

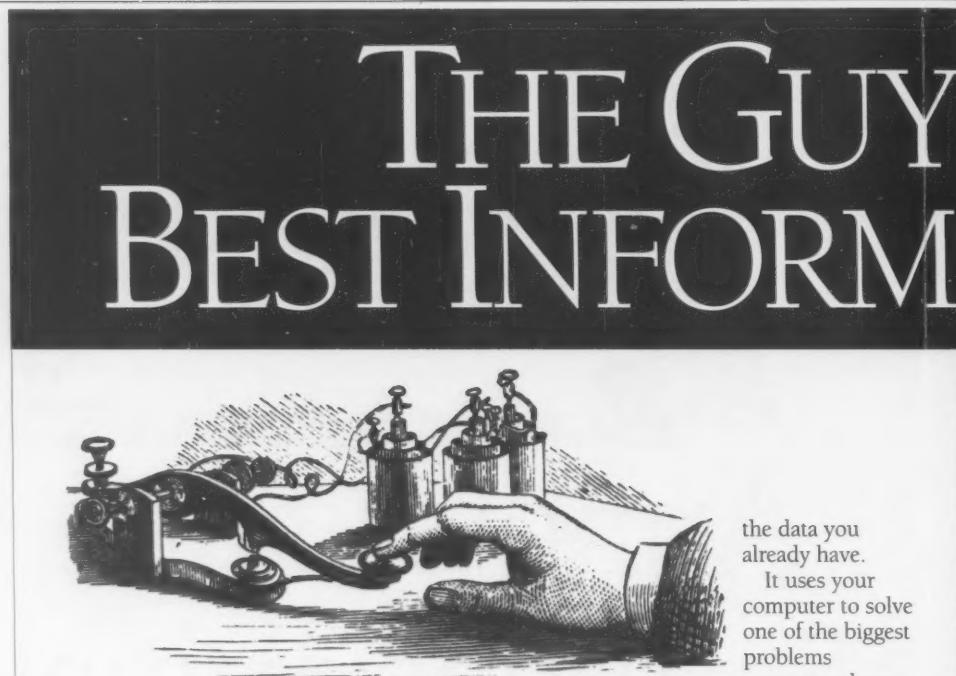
Annual maintenance costs for an EIS are almost as expensive as the initial purchase

	Initial version				
	Hardware	Software	Personnel	Training	TOTAL
Maximum	\$330,853	\$340,000	\$450,000	\$80,000	\$1,200,853
Average	\$153,437	\$173,531	\$103,941	\$19,253	\$450,162
Annual ongoing support					
	Hardware	Software	Personnel	Training	TOTAL
Maximum	\$400,000	\$200,000	\$300,000	\$60,000	\$960,000
Average	\$31,809	\$53,636	\$119,181	\$18,000	\$222,626

Data was collected from 51 organizations

Source: University of Georgia

CW Chart: Doreen St. John



the data you already have.

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much data. Not enough information.

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## DATA, DATA, EVERYWHERE

If you're like most managers the data you use to make decisions is scattered around a computer network. Even if all the hardware and software on the network

talks to one another (which is highly unlikely), the task of collecting what you need, monitoring it on a regular basis, and getting reports you can actually use, is a nightmare. Wouldn't it be nice if someone could prepare timely reports of just the things you needed to know, when you needed to know them?

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software for getting the information from

Continued from page 68

the top of the organization into separate, decentralized business units that either don't have a mainframe or can't justify the high cost of host-based software.

But what happens if the system grows? "People start out and say, 'Yes, we can do a LAN-based EIS and fit it all on this one server,'" says David DeLong, an EIS researcher at Boston University. "What they don't realize is 20 years down the road, they're going to have 200 users on the system instead of 20."

It may not be apparent at the start, but growth is one thing all EISs have in common. "Maybe not initially, maybe not even in the first year, but eventually, if the EIS is going to be a success, it's going to have to tap into a very large percentage

of the corporate databases," says Bob Konrad, vice president at The Executive Insight Group in Bryn Mawr, Pa.

"EIS is fundamentally a systems integration project," says Ian Meiklejohn, director at Business Intelligence. "You're consolidating data from a variety of different sources, and that number can be surprisingly large."

That doesn't disqualify LAN-based systems from supporting a large user base. Meiklejohn cites Frito-Lay, Inc., whose LAN-based EIS delivers information to hundreds of managers.

However, anyone considering a large implementation needs to have some sophisticated IS capability, especially in a complex environment. "I wouldn't recommend the LAN-based EIS in a LAN-

over-LAN, big corporate environment," says Richard McGahey, president of McGahey & Associates, a Berlin, Conn.-based EIS consulting firm.

#### Ready to grow

One way to prepare for growth is to make sure the software supports any currently installed or planned LAN architectures and hardware platforms. Another way is to make sure the product supports many different protocols and has strong import/export facilities, including extract editors and tools that parameterize information before it is sent to the server database.

"The quality of tools in this area is important," Meiklejohn says. "PC tools tend to be weaker than host-based, since

they sometimes assume the environment is going to support standards."

One example is Lightship, which currently supports Windows and the Microsoft Dynamic Data Exchange protocol. Pilot says it will be shipping a version that supports mainframe connectivity within the next six months.

It is actually not uncommon to maintain access to the mainframe database with a LAN product that supports mainframe links. With these products, "the LANs are used to present and deliver the final screens, but the storage is taken care of by the host," Meiklejohn says.

This setup is intended not only to support a large database but also to speed response time. "You've got one download to the file server rather than 100 separate downloads to PCs," Lockheed's Woodward says.

When planned well, a LAN-based EIS can work to your advantage, even as it grows to support more databases and more applications. This is especially true when you're first trying to rally support for the system.

"Many EISs are not successful because of a lack of organizational responsiveness or a lack of sponsorship," McGahey says. "Rather than implementing a corporatewide, host-based system, the LAN is more controlled. You can be more successful implementing an EIS among 20 people than 200."

#### Which platform?

*LAN-based executive information systems (EIS) offer many advantages, but planning is crucial for inevitable growth*

#### HOST-BASED EIS

##### Strengths

- Excellent systems and data integrity.
- Instantaneous delivery of new data to the workstation.
- Large-scale storage and processing resources.
- Can support large user populations.
- Ease of integration with other corporate systems.
- Robust security.

##### Weaknesses

- Expensive hardware and software.
- May pose problems of reliability (down time).
- May provide inadequate response times.
- Inflexible (e.g., cannot use portables).
- Development may require significant IS involvement.

#### LAN-BASED EIS

##### Strengths

- Low-cost software.
- Easier to install for small user base.
- Faster response time.
- Integration with other PC tools.
- Reduced maintenance.
- Less dependence on IS for ongoing applications development.

##### Weaknesses

- More difficult to support large or geographically dispersed user populations.
- May need mainframe link if database grows or if more access to corporate information is required.
- More difficult to update EIS database frequently.
- Poor integration with decision support system.
- Risk of data redundancy and inconsistency.

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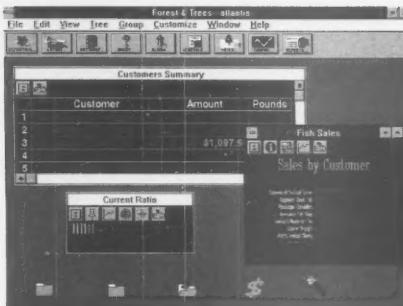
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## BUYERS' SCORECARD

## Command Center rates first in EIS face-off

COMPUTERWORLD



## Executive information systems

Total scores reflect average user ratings for all measured areas, weighted by user-assigned importance. Response base for all products: 50

Product	Highest ratings	Lowest ratings
Pilot Executive Software's Command Center	Ease of screen design and maintenance Effectively presenting graphics, tables and text simultaneously Support for rapid prototyping Varied application shells Ease of customization	Useful on-line Help screens Efficient access to external databases Efficient data extraction from existing databases Effective interfaces to other software Ease and variety of output creation
Comshare, Inc.'s Commander	Effectively presenting graphics, tables and text simultaneously Well-integrated decision support systems Support for rapid prototyping Integrating data from different sources Efficient access to external databases	Useful on-line Help screens Pricing of installation and maintenance Varied application shells Ease and variety of output creation Ease of customization

SCORE  
54

Comshare, Inc.'s Commander

SCORE  
52
 BY MICHAEL L.  
 SULLIVAN-TRAINOR  
 CW STAFF

**D**espite the growth of the personal computer-based executive information systems (EIS) market, mainframe EISs are still prominent at most large companies where complex applications and numerous users make large-systems management essential.

For as long as there has been an EIS market, two major players have gone head to head, keeping smaller rivals at bay while matching each other feature for feature. Comshare, Inc.'s Commander and Pilot Executive Software's Command Center each own close to half of the host-based EIS market, with IBM's Executive Decisions and Information Resources, Inc.'s Express EIS trailing in the distance.

Fifty users of the top two products were surveyed separately for this Buyers' Scorecard, with each group rating only its own product. Total scores are based on the average of each category rating multiplied by an importance factor assigned to each category by all 100 users surveyed (see methodology next page). User ratings for Express EIS are tallied separately because only a small number of vendor-supplied users were available for polling (see next page). IBM is not rated.

A year ago, the two products finished in a dead heat, with Command Center edging out Commander by only two-tenths of a point in a *Computerworld* Buyers' Scorecard that featured user ratings of each product across 17 categories. This year, Command Center managed to widen the differential in user ratings to two full points.

Command Center's lead in ratings was bolstered by strong marks in five categories rated most important to both user groups, particularly ease of screen design and maintenance. The mark users gave Command Center on that characteristic — 8.3 — was the highest for any portion of the survey. Its automatic program generator gives it an edge in this category, which also received the highest rating last year.

Command Center received its lowest ratings for ease and variety of output creation, database access and interfaces to other software. The rating for this last category represents a significant change from last year, when the product received the top grade on the same question.

Commander's strong links to internal and external databases showed up in higher ratings for ability to integrate data from different sources, data extraction and query capability. Commander also achieved the highest rating for well-integrated decision support systems, which reflects the product's integration with Comshare's System W. This rating was Commander's second highest grade — 7.7 — and was well ahead of Command Center, which earned a 6.8.

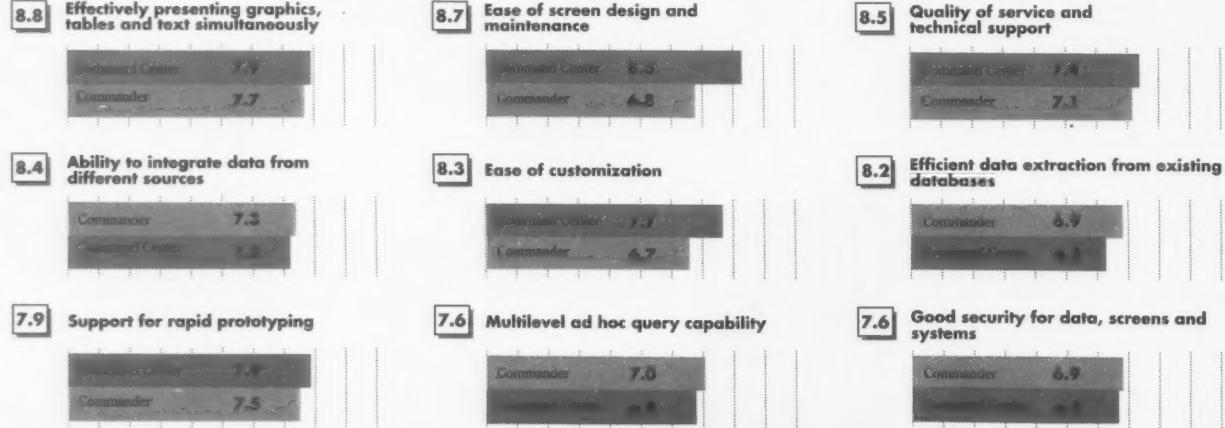
The lowest ratings of the survey were given to Commander for on-line Help screens (5) and pricing of installation and maintenance (5.5). Other low ratings came in application shells and ease of customization categories.

Commander users said they would like Comshare to add better graphics options and interfaces to other products as well as more user-friendly options and stronger local-area network support. Users of Command Center want support for more types of databases, better graphics and better interfaces. •

## KEY RATINGS

Pilot's Command Center receives the highest ratings in five of nine categories that users rated most important, including the top three key ratings. Comshare's Commander is rated highest in security, ad hoc query and data extraction categories.

User importance rating:



## A CLOSER LOOK

Comshare's Commander is rated highest in four of eight closer-look ratings, but Pilot's Command Center receives top ratings in the other four, including pricing, interface support and application shells.

User importance rating:

## 7.3 Effective support for multiple user interfaces



## 6.9 Ease and variety of output creation



## 7.4 Pricing of installation and maintenance



## 7.3 Effective interfaces to other software



## 7.3 Efficient access to external databases



## 7.2 Well-integrated decision support systems



## 6.8 Varied application shells



## 6.0 Useful on-line Help screens



## Verbatim

## What is the major strength/weakness of this product?

(Responses are based on the most frequently stated answers.)

Response base: 50 per product

## Likes

- Ease of use
- Maintenance
- Development
- Ability to integrate databases
- Flexibility

## Dislikes

- Difficult to access multiple sources of data
- Not user-friendly
- Response time could be quicker

## Likes

- Ease of use
- Maintenance
- Development
- Excellent graphical capabilities
- Ability to integrate multiple databases

## Dislikes

- Too maintenance-intensive
- Not enough functionality
- Difficult to access multiple sources of data

## Loyalties

## How likely would you be to purchase this product again if you were making the decision today?

(Reasons based on most frequently stated responses)

Response base: 50

**Likely**  
The reason:  
Ease of use  
Maintenance  
Design

45

**Unlikely**  
The reason:  
Doesn't meet our particular needs

5

Number of respondents

Response base: 50

**Likely**  
The reason:  
It meets our needs

45

**Unlikely**  
The reason:  
Graphics not developed enough

5

Number of respondents

## Vital statistics

Total number of respondents: 100

## What is your position?

- Manager ..... 52
- Staff ..... 21
- Director ..... 20
- Other ..... 7

## How many executives use the EIS product?

- 1 ..... 1
- 2-10 ..... 19
- 11-20 ..... 31
- 21-40 ..... 18
- 41-60 ..... 8
- 61-80 ..... 8
- 81-100 ..... 8
- More than 100 ..... 7

## How long have you been using this product?

- Less than 2 years ..... 21
- 2-3 years ..... 52
- 3-4 years ..... 18
- More than 4 years ..... 9

## How much did the system cost?

- Less than \$11,000 ..... 0
- \$11,000-\$50,000 ..... 5
- \$50,001-\$100,000 ..... 9
- \$100,001-\$300,000 ..... 32
- \$300,001-\$500,000 ..... 25
- \$500,001-\$700,000 ..... 5
- \$700,001-\$800,000 ..... 1
- \$800,001-\$1 million ..... 2
- More than \$1 million ..... 4
- Don't know ..... 17

## IRI's ratings

Although behind the major players in market share, Information Resources, Inc. is working hard to gain ground with Express EIS. With the acquisition of Execucom System Corp.'s Executive Edge by Comshare, there is more room for a third-place contender.

Fifteen users rated Express EIS highest in ad hoc query and decision support systems integration. The product received low marks on efficiency of access to external databases and usefulness of Help screens.

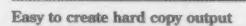
## Multilevel ad hoc query capability



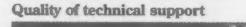
## Well-integrated decision support



## Support for rapid prototyping



## Easy to create hard copy output



## Quality of technical support



## Ease of customization



## Pricing



## Effective support for multiple user interfaces



## Efficient data extraction



## Varied application shells



## Effectively presenting graphics, tables and text simultaneously



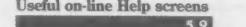
## Ease of screen design



## Ability to integrate data



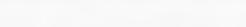
## Good security



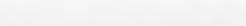
## Effective interfaces



## Useful on-line Help screens



## Efficient access to external databases



is very good and 1 is very poor. Total scores are calculated by taking the average of user ratings for each criterion and multiplying them by the average of ratings users assign to the importance of the criterion.

Of the 100 Commander and Command Center users surveyed, 71% reported that the products run in conjunction with more than five applications. Another 22% reported that up to five applications are used with the EIS systems, and 4% reported only one application up and running.

In terms of their responsibility for EIS, 86% of the respondents said they evaluate and recommend vendors, 80% set standards for the organization, and 78% select vendors.

Twenty-six percent of the respondents work

in manufacturing companies, 18% in insurance and financial services, 9% in government agencies and 7% in banking. Fifty-four percent of the companies have annual revenue of more than \$1 billion. Twenty-four percent have revenue between \$90 million and \$1 billion.

## ACKNOWLEDGMENTS

*Computerworld* thanks the following individuals and organizations for their assistance in producing this Buyers' Scorecard: Computer Intelligence; Cliff Conneighton, Gartner Group, Inc.; Christina Filistowicz, Dataquest, Inc.; Clark Gillin, International Data Corp.; Hugh Watson, University of Georgia.

## METHODOLOGY

To qualify for *Computerworld's* Buyers' Scorecard on executive information systems (EIS), a product had to be a market leader in terms of installed base among host-based systems. The base also had to include enough quantities of users to allow for a minimum of 50 respondents. Names of users surveyed for Comshare, Inc.'s Commander and Pilot Executive Software's Command Center were obtained from non vendor sources.

The telephone survey was conducted and tabulated by First Market Research in Austin, Texas. Criteria were developed in consultation with experts who follow the technology.

Ratings are based on a 1-to-10 scale where 10

# Executive information systems software

VENDOR	PRODUCT	HARDWARE PLATFORM	OPERATING SYSTEM	SYSTEM ARCHITECTURE	DISK SPACE NECESSARY TO LOAD PROGRAM (BYTES)	TYPES OF GRAPHICS	GRAPHICS CAPABILITY	IMPORTS GRAPHICS	OFFICE AUTOMATION TOOLS INTERFACED WITH	REPORT GENERATION (STATIC OR AD HOC)	UPDATE PROCEDURE (AUTOMATIC OR MANUAL)	APPLICATIONS DEVELOPMENT	NETWORKS SUPPORTED	WINDOWING FACILITY SUPPORTED	USER INTERFACES AVAILABLE	OTHER FEATURES	PRICE
American Information Systems, Inc. (717) 724-1588	Bedminster	IBM PC/AT, PC/XT, PS/2 and 1468-based machines	DOS, Windows 3.0	LAN-based, stand-alone PC	3M	Dependent on external graphics packages	Hercules, EGA, VGA, CGA	Yes	External program facility provides access to most other packages, including spreadsheets, databases, E-mail, communications, word processing	Both	Both	Yes	Major networks	DOS, Windows 3.0	Keyboard, mouse, remote control, touch screen	On-line calendar, voice annotation	\$1,495 for development, \$100.00 per PC
Advisors, Inc. (212) 329-5999	Harry	IBM 370/390	VM, MVS	Host-based	640K for PC, 4M for mainframe	Bar, pie, XY, line	VGA	No	Spreadsheets, databases, E-mail, communications, word processing	Both	Both	Yes	Any PC-compatible network	Windows 3.0, DOS, Windows	Keyboard, mouse	Large-screen display	\$55,000 and up
Alstom-Tate Corp. (213) 329-9999	Framework IV	IBM PC/AT, PC/XT, PS/2 and compatibles	PC-DOS, MS-DOS 2.11 - 4.01 and compatibles	LAN-based, stand-alone PC	640K, hard disk, floppy drive	Bar, line, pie, scatter, stacked bar, XY, 3-D, High/low	Hercules, EGA, VGA	Yes	Spreadsheets, databases, E-mail, communications, word processing, outlining, graphics	Both	Automatic	Yes	Novell Netware 286, 386, IBM PC LAN, 3Com 3+Open, NetInfo-compatible	NA	Keyboard	Outlining capability	\$695, \$295 for network access, \$995 for up to 5 users
Channel Computing, Inc. (401) 658-2833	Forest & Trees	IBM PC/XT, PC/AT, PS/2 and later, compatibles	MS-DOS 3.0 and later, Windows 3.0, HP New Wave 3.0	LAN-based	2M	Bar, pie, XY, line	EGA, VGA	Yes	Spreadsheets, databases, E-mail, communications, word processing	Both	Both	Yes	Novell Netware, Microsoft LAN Manager, IBM LAN Server, IBM PC/Net, Banyan Vines	Windows 3.0	Keyboard, mouse, light pen	Autolaunch applications	\$495
Cognit Information Systems, Inc. (201) 379-7979	EIS/Corporate Performance Analysis	Any Unix platform, VMS	Pico, Pick/Unisys system	Stand-alone PC	Platform-dependent	Bar, pie, XY, line and dependent on external graphics packages	VGA	Yes	Spreadsheets, databases, E-mail, communications, word processing and any outside package	Both	Both	No	None	Proprietary	Keyboard, mouse	None	\$35,000
Comshare, Inc. (800) 922-7970	Comshare EIS	IBM PS/2 model 70, 80 and later, compatibles, Macintosh	DOS 3.1, OS/2 Version 1.2, Presentation System 6.0 and later	Host-based, LAN-based, stand-alone PC	10M for PC	Bar, pie, line, 3-D	EGA, VGA, XGA, IBM 8514	Yes	Spreadsheets, databases, E-mail, word processing	Both	Automatic	Yes	Novell Netware, IBM PC LAN, Banyan Vines, LAN Manager, Token Ring, Ethernet, AppleTalk	OS/2, Macintosh	Mouse, touch screen	Imaging capabilities, large-screen display	\$48,000
Computerware/Collier Jackson (813) 872-9990	EIS	80386-based machines and higher	Windows 3.0	LAN-based, stand-alone PC	2M	Bar, pie, XY, line	EGA, VGA	No	Spreadsheets, databases, E-mail, communications, word processing	Ad hoc	Automatic	No	Novell Netware	Windows 3.0	Keyboard, mouse	None	\$895 per user
Computer Associates International, Inc. (703) 709-4665	CA's Vision	IBM PCs and compatibles	MS-DOS	LAN-based, stand-alone PC	2M	Bar, pie, XY, line, 3-D, Harvard Graphics, imaging, CGM files	Hercules, EGA, VGA	Yes	Spreadsheets, databases, E-mail, communications, word processing, animation, graphics	Both	Both	Yes	Banyan Vines, Novell Netware	Proprietary	Keyboard, mouse, remote control	Large-screen display	\$395 per user
Dialogue, Inc. (212) 425-2645	Access Executive	IBM 80386-based PCs and compatibles, VMS/CMS, Unix systems, VAX	Unix, VMS, VM/CMS, PC-DOS	Host-based, LAN-based, stand-alone PC	100M	Bar, pie, XY, line, 3-D, customized	Hercules, EGA, VGA	No	Spreadsheets, databases, E-mail, word processing	Ad hoc	Automatic	No	Novell Netware, NFS, LAN Manager	Motif	Keyboard, mouse	None	\$2,000 - \$20,000 depending on hardware
Dow & Bechtel Software Services, Inc. (404) 239-4636	Smartview	IBM 386, PS/2 Model 50 and compatibles	MS-DOS 3.3 and later	Host-based, LAN-based, stand-alone PC	10M, 300 cylinders on the host	Bar, pie, XY, line, 3-D	VGA	No	Spreadsheets, databases, E-mail, communications, word processing	Static	Both	Yes	Novell Netware, IBM PC LAN	None	Keyboard, mouse, touch screen	Large-screen display, on-line calendar	\$80,000
Easel Corp. (817) 221-3066	Manager's Portfolio	IBM PC/AT, PS/2 and compatibles	DOS, OS/2, Windows 3.0	LAN-based, stand-alone PC, can also access mainframes	2M	Pie, line, 3-D, XY	Hercules, EGA, VGA	Yes	Spreadsheets, databases, E-mail, communications	Static	Automatic	Yes	Most networks, including 3Com, LAN Manager, IBM Token Ring, Banyan Vines, Novell Netware	Windows 3.0, OS/2 Presentation Manager	Keyboard, mouse, touch screen	Imaging capabilities, on-line calendar	\$12,000
Epic Software, Inc. (917) 270-5554	Epic	Any supporting DOS, Windows 3.0, OS/2, Unix	DOS, OS/2, Unix	LAN-based, stand-alone PC	6M	Bar, pie, XY, line, 3-D	EGA, VGA	Yes	Spreadsheets, databases, E-mail, communications, word processing, most LAN and PC products	Both	Automatic	Yes	Microsoft-compatible, TCP/IP with Unix	Windows 3.0, Presentation Manager	Keyboard, mouse, remote control, touch screen	Imaging capabilities, large-screen display, on-line calendar	\$25,000 for five users
Feron Microsystems, Inc. (703) 684-8550	EIS Toolkit 1.0	IBM PC/XT, PC/AT and compatibles	DOS 2.0 and later	LAN-based, stand-alone PC	2M	Bar, pie, line	Hercules, EGA, VGA	No	Spreadsheets, databases, E-mail, communications, word processing	Both	Manual	Yes	Novell Netware, 3Com, Token Ring	None	Keyboard, mouse	Large-screen display	\$3,000
Global Software, Inc. (919) 872-7800 (800) 329-3444	Global Information Manager	IBM 80386-based machines and higher and compatibles, Unix, AS/400	MS-DOS, Windows 3.0, OS/400	Host-based	15M	Bar, pie, XY, line, 3-D	Hercules, EGA, VGA	No	Spreadsheets, databases, word processing	Static	Both	No	Token Ring, Novell Netware, Banyan Vines	Windows 3.0	Keyboard, mouse	Large-screen display	\$35,000 - \$100,000 depending on platform
Holos Systems, Inc. (303) 790-7939	Holos	IBM RS/6000, DEC VAX, HP, Sequent	VAX/VMS, Unix	Host-based, LAN-based, stand-alone PC	9M for PC, 10M for host	Bar, pie, XY, line, 3-D	EGA, VGA, Macintosh	Yes	Spreadsheets, databases, E-mail, communications	Ad hoc	Automatic	Yes	Most major networks	Windows 3.0, Macintosh System 6.0 and 7.0	Keyboard, mouse, touch screen	Imaging capabilities, large-screen display	\$50,000
IBM (800) 426-3333	Executive Decisions	IBM PS/2, 80386-based machines, 370/390	OS/2 Extended Edition, MVS VM	Host-based, can run on LAN with host present	4M	Bar, pie, XY, line, 3-D, other external graphics packages	VGA, XGA	Yes	Spreadsheets, databases, E-mail, communications, word processing, other user applications	Both	Both	Yes	NP	OS/2	Keyboard, mouse, touch screen	Imaging, large-screen display, on-line calendar, voice annotation, address book	\$18,000 - \$75,000, \$1,000 - \$3,000/month for lease
IMRS Co. (203) 323-6500	IMRS Ostrack	IBM PCs and compatibles, any LAN	DOS Version 3.0 and later, Windows 3.0 and later	LAN-based, stand-alone PC	5M	Dependent on external graphics packages, primarily Excel 3.0	VGA	Yes	Spreadsheets, databases, E-mail, communications, word processing, Lotus' Notes	Both	Automatic	Yes	Novell Netware, IBM LAN Manager, Banyan Vines	Windows 3.0	Mouse, remote control, touch screen, say Windows-supported devices	Imaging capabilities, large-screen display, on-line calendar	\$60,000 for 10 users

The companies included in this chart responded to a recent survey conducted by *Computerworld*. When a vendor is unable to provide specific information about its product, the abbreviation NP (not provided) is used. When a question does not apply to a vendor's product, the abbreviation NA (not applicable) is used. Contact vendor for further product information.

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Information Builders, Inc. (212) 736-4333 (800) 969-6336	Focus/EIS for Windows	80386- and 80386SX-based machines and compatibles	DOS 3.1, Windows 3.0	LAN-based, stand-alone PC, can also access mainframes	1.7M	Bar, pie, XY, line, other external graphics packages	Hercules, EGA, VGA, any that support Windows 3.0	Yes	Spreadsheets, databases, E-mail, communications, word processing, any other application-based software via dynamic data exchange	Both	Both	No	Novell Netware, PC LAN, 3Com, Ungermann-Bass, Banyan Vines	Windows 3.0	Keyboard, mouse, touch screen	Any supported by Windows 3.0	\$395
Information Resources, Inc. (617) 890-1106	Express/EIS	Any machines that support operating systems at right	MVS, VMS, MPE/XL, Primos, DOS, SUN OS, Ultra, RPUX	LAN-based, stand-alone PC	3M per workstation, 4M per stand-alone PC	Pie, XY, 3-D, area clustered, stacked bar, stacked line, bar line	Hercules, EGA, VGA	Yes	Spreadsheets, databases, E-mail, communications, word processing	Both	Both	Yes	3Com, bisynchronous, asynchronous, Banyan Vines, Ethernet, Novell Netware, Token Ring, SNA, SDLC	Proprietary, Windows 3.0	Keyboard, mouse, remote control, touch screen	CD-ROM support, imaging capabilities	\$50,000 and up
Integrated Data Architects (800) 691-1127	Metadact	IBM PCs and compatibles, mainframes	DOS 3.1 and later, MVS, CMS	Host-based, LAN-based, stand-alone PCs	3M	Bar, pie, XY, line, 3-D	EGA, VGA	Yes	Spreadsheets, databases, E-mail, communications, word processing	Both	Automatic	Yes	Most major networks	Windows 3.0	Keyboard, mouse, remote control	Large-screen display, on-line calendar	NP
Intelligent Office Co. UK: (011-44) 81-528-9864	EIS-Track	IBM PC-compatible, any minicomputer, VME/400 as an option	OS/2	LAN-based, stand-alone PC	4M	Bar, pie, line, XY	VGA, XGA	Yes	Spreadsheets, databases, E-mail, communications, word processing, financial consolidation, reporting systems	Ad hoc	Automatic	Yes	Novell Netware, LAN Manager, Token Ring, PC/SA	Presentation Manager	Keyboard, mouse, remote control, touch screen	Imaging capabilities, large-screen display, on-line calendar, multimedia	\$30,000
Interactive Software Services, Inc. (708) 595-2222 (800) 283-3550	AMIS	IBM AS/400, IBM System 38	OS/400, CPF	Host-based	1.5M for PC, 35M for AS/400 and System 38	Bar, pie, XY, line	VGA	No	Spreadsheets, databases	Both	Automatic	Yes	None	None	Keyboard, mouse	None	\$24,000 on AS/400 model D25
Metaphor Computer Systems, IBM (415) 961-3600	IBM Data Interpretation System	IBM PS/2, 80386-80486-based machines	OS/2 1.3 and later, OS/2 Extended Edition	LAN-based	13K	Bar, line, pie, XY	IBM 8514/A-compatible	Yes	Spreadsheets, databases, E-mail, word processing, communications	Both	Both	Yes	Ethernet, Token Ring	Proprietary	Keyboard, mouse	Large-screen display	\$10,000 to \$150,000 for 10 users, depending on options
Metaprise, Inc. (212) 935-3232 Metaprise, Inc. (011-44) 81-541-1696	Resolve 2000	IBM PC/AT, PS/2 and compatibles	MS-DOS, PC-DOS	LAN-based, stand-alone PC	2M, up to 200M for database	Bar, pie, XY, line and more than 1,000 other coded types of presentation	EGA, VGA	Yes	Spreadsheets, word processing, desktop publishing, interfaces customized on request	Both	Both	NA	Novell Netware, LAN Manager, 3Com, etc.	Windows 3.0, Desqview	Keyboard, mouse, remote control, touch screen, either infrared or hard-wired 12-key keyboard	Large-screen display, fully portable using notebooks/portable computers, Management Library, etc.	\$3,750 stand-alone, \$318,500 network version
New Generation Software, Inc. (916) 920-2200	Interactive Query	IBM AS/400, System/38	OS/400, CPF	Host-based	20M	Bar, line, pie, XY	IBM Business Graphics Utility	Yes	Databases, word processing	Ad hoc	Manual	No	None	None	Keyboard	None	\$750-\$18,500 depending on AS/400 model
Pilot Executive Software (817) 330-7035	Lightship	Minimum of IBM 80386SX-based machines and compatibles	Windows 3.0	LAN-based, stand-alone PC	1M	Bar, pie, XY, line, stacked bar	Hercules, EGA, VGA	Yes	Spreadsheets, databases, E-mail, communications, any dynamic data exchange-supporting program	Ad hoc	Automatic	No	Any supporting Windows 3.0	Windows 3.0	Keyboard, mouse, remote control, touch screen, Windows 3.0 drivers	Available with add-on software	\$795
	Command Center	Minimum of 8088-based machines (DOS), 80386-based machines (Windows), any supporting operating systems at right	DOS, Windows 3.0, Macintosh, MVS/VTOS, VM/CMS, VAX/VMS, Unix	Host-based, LAN-based	30M	Bar, pie, XY, line, 3-D	EGA, VGA	Yes	Spreadsheets, databases, E-mail, communications, word processing	Both	Automatic	Yes	SNA, DECnet, TCP/IP	Windows 3.0	Keyboard, mouse, touch screen	Large-screen display	\$50,000
SAS Institute, Inc. (919) 737-6000	The SAS Application System	IBM 370 3000, 9370 series and compatibles, Digital VAX, Prime 50 series, Data General, Unisys, Encore MV Series, IBM PCs and compatibles, etc.	MVS, CMS, VSE, VMS, AOS/VS, Primos, PC-DOS, MS-DOS, DOS, OS/2, AIX, RISC, Linux, DOS, HP UX, DEC-UX, RISC/OS Domain/OS	Host-based, LAN-based, stand-alone PC	512K for mainframes and 640K for PCs and Unix	Bar, pie, XY, line	Hercules, EGA, VGA	No	Spreadsheets, databases, E-mail, communications, word processing	Both	Both	Yes	Novell Advanced Netware, IBM Token Ring, Ungermann, IBM OS/2 LAN Server, Microsoft LAN Manager	Motif, Open Look	Keyboard, mouse, touch screen	CD-ROM support, large-screen display, on-line calendar	Licensed on annual basis
Southware Innovations, Inc. (205) 821-1108	Executive II	More than 100 platforms supported, including AIX, DOS, Unix, Xenix	Unix/Xenix, AIX, MS-DOS, VMS, AOS/VS, Netbios Network	Host-based, LAN-based, stand-alone PC	2M	Bar	Hercules, EGA, VGA	Yes	Spreadsheets, databases, word processing	Both	Both	No	Novell Netware, 3Com, Lantastic, Netbios	None	Keyboard	On-line calendar	NP
Softouch Software, Inc. (503) 241-1841 (800) 828-1841	Executive Management System	Apple Macintosh operating system	LAN-based, stand-alone	2.5M	Bar, line, pie	Macintosh	Yes	Customizable	Ad hoc	Both	No	Any Macintosh-supported network	No	Keyboard, mouse, touch screen	None	\$295	
Software 2000 (508) 779-3900	Vital Signs 2000	IBM PCs and compatibles, AS/400	DOS, Windows 3.0, OS/400	Host-based	1.2M	Bar, pie, XY, line	VGA	No	Spreadsheets, E-mail, word processing via dynamic data exchange	Both	Automatic	Yes	Banyan Vines, Novell Netware	Windows 3.0	Keyboard, mouse	None	NP
Transpower Corp. (215) 495-8362	Optimal Manager	IBM PC/AT, PS/2 and compatibles	MS-DOS 2.0, DR-DOS 5.0 and later	LAN-based, stand-alone PC	3M	Dependent on external graphics packages	NA	No	Spreadsheets, databases, word processing	Static	Manual	Yes	Western Digital's Vnet, Novell Netware	None	Keyboard	None	\$495

## Project proficiency

*Successful projects begin with project managers who complement their technical competence by mastering people skills*

BY RALPH L. KLIEM

**W**hen you get beyond Gantt charts, network diagrams and documentation matrices, information systems project management is essentially about managing people. Whether it's a two-person coding job or a multiyear strategic software initiative, getting employees behind a project is imperative. Without this support, projects can be costly and may even fail. IS heads may roll.

Project management success begins by knowing the techniques and skills needed to handle the human resources involved. Dealing with people working directly on the project requires selecting a project leader who can motivate, encourage teamwork and communicate well. (See story page 78 on the skills needed to be a successful project manager.)

### Can't hire, can inspire

Motivating employees working on a project can prove difficult. Quite often, project managers have little or no authority to do the things that signal favor or disfavor with workers: promoting, demoting, hiring, firing and administering pay increases. This authority typically rests with functional or task managers who oversee the project. Without the ability to mete out punishments or rewards, project managers may discover that it is difficult to find employees who will dedi-

Kliem is an electronic data processing auditor on the corporate IS staff of a Fortune 500 firm and author of *The Secrets of Successful Project Management*, published by Wiley Press.

cate themselves to the project.

Project managers, therefore, must find alternative ways to motivate employees to work well for them.

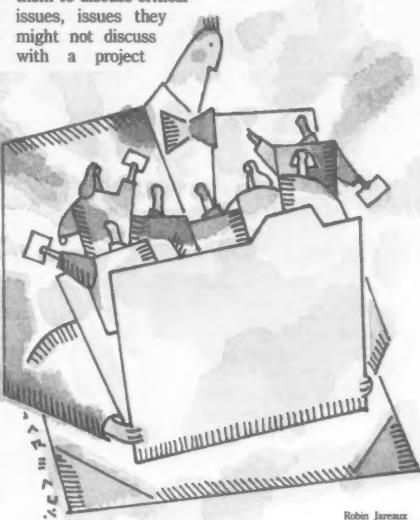
One way is to involve employees in the decision-making process. This increases the vested interest a staff member has in the project, and it lets him know how important he is to it. Project managers should encourage participation to lower resistance and encourage commitment.

Project managers can foster commitment and ensure a motivated staff by letting employees know what is expected of them. Employees need to know up front whether the project will require 40% or 100% of their time as well as what kind of priority the organization has given their project. Then employees can manage their time accordingly. They can designate the appropriate amount of their energy toward the project and their primary duties without fear of running into a conflict with either the project manager or the functional manager.

Valuing employees will go a long way in motivating IS staff members to work hard. Each employee on the project has unique needs, perceptions, values and skills. Project managers must recognize and play on strengths and unique qualities, which will in turn encourage dedication to getting the project completed.

A good project manager is one who places as much emphasis on the "manager" part of his title as he does on the "project" part. He shouldn't get so caught up in the details — developing schedules, tracking costs and so on — that he forgets that managing people is also a high priority.

Project managers should be approachable. Employees must feel comfortable talking about problems when they arise. Knowing they have a sounding board not only keeps employees satisfied and motivated, but it also encourages them to discuss critical issues, issues they might not discuss with a project



Robin Jareau

manager who is perceived as cold or aloof.

Money is not necessarily always the most powerful motivator for doing a good job. Nothing motivates people more than knowing their manager will work hard to support them. Even if it's not in the project manager's power to give monetary or recognition awards personally, he can recommend monetary awards, publicly note achievements, submit recommendations for achievement awards or write letters of appreciation.

### Go team!

Besides motivating people to do their best, encouraging teamwork is also crucial to completing a project. The project leader must bring together people with varied skills and talents to produce a product.

However, keeping a project on track can be a tricky proposition because of the

*Continued on page 78*

### To be a better project manager . . .

Beyond outside courses and on-the-job training, there are other, less obvious ways to ensure that you'll be the kind of project manager who succeeds:

- Meet with successful project managers in your firm.
- Talk with project managers in other firms.
- Read histories (often called "Lessons Learned") of previous projects conducted in your firm.
- Re-evaluate your own experience after each project you manage.
- Read classic articles and books on management topics by authors such as Abraham Maslow and Peter Drucker.

#### • Motivation, teamwork, communication

#### • Good techies can be bad project managers

#### • Six 'soft' skills that are a must

*Continued from page 77*  
vagaries of group dynamics.

Because of the way most projects are organized, they go against the very nature of teamwork. Employees often find they have divided loyalties between the project manager and the functional manager. Theoretically, no employee should work for two managers; this violates the principle that there is unity in a single point of command. But under a matrix structure, that principle is violated.

In cases in which employees must choose between the two, the functional manager typically wins. That's because he has the authority to hire, fire, determine schedule requirements, establish performance standards and purchase materials and equipment. In short, he has more power than a project manager has.

To counter this potentially divisive situation, project managers should coordinate with functional managers to define the employee commitments on their projects and the extent of command and control the project manager has. Project and functional managers should then make their staff members aware of their decisions so no misunderstandings arise.

Another teamwork killer is tunnel vision. Because a diverse group of people supports a project, employees often lose sight of the project's objective: to build a

software system, install a network and so on. IS employees see the project from their own perspectives, which are too often purely technical. Because of their limited perspectives, they often lose sight of what they're working toward.

Because good project managers see the entire picture, they should remind employees that they share a common objective — to build a system that works for the business — and indicate how the activities of each employee contribute to reaching that team goal.

For example, project managers can offer staff members a view of the entire project by discussing the impact of critical activities on various aspects of the project at staff and status meetings. Reviewing network diagrams showing the ripple effects of a project delay can be effective.

Fostering teamwork also requires a project manager skilled in conflict resolution. Conflicts, which can quickly divide a team, will likely center around schedules, manpower utilization, priorities, costs, procedures, policies and personalities. If human and material resources are scarce, the potential for these conflicts is even greater. Project managers must be skilled in resolving these conflicts judiciously.

The important point for everyone to know is that human and technology resources must go first to those activities

deemed critical to completing the project.

The key to successful project management rests with clear and open communications. It does the project little good if project managers are unable to explain to employees what is expected of them and what their priorities are.

However, merely holding meetings, establishing policies, distributing project documentation and creating a project history file does not a good communicator make. A communications gap between project managers and employees can still exist. Project managers can bridge that gap by taking into account the individual needs of people on their teams as well as interests, goals, skills, attitudes and perceptions. By recognizing individual needs, project managers can assign people to tasks that draw on their strengths and encourage greater participation.

To be good communicators, therefore, project managers must have the ability to relate to other people.

#### Keeping staff up-to-date

Communicating well means keeping staff members apprised of changes that affect them. If project responsibilities change midcourse, project managers must inform each employee of the what's, whens, wheres and hows of the changes. In this way, employees can quickly redirect their

energies to completing new or altered tasks, thereby achieving the goals of the project more productively.

Good communication is not confined to speech. Project managers must also know when to listen. Listening clues the project manager in to potential human resources, technical or financial problems and provides him with feedback about how he's doing on the job.

If project managers shelter themselves from feedback, they will be unable to detect or anticipate serious problems.

If a project involves a large number of people, project managers can easily become isolated from employees. That is dangerous for the project. Communicating via memos, reports, policies, procedures and other formal methods does not have the impact on employees that more personal means of communication have.

Project managers should always try to keep the lines of communication open. They can hold staff and status review meetings regularly as well as meet with employees individually. They can also solicit input and feedback from employees regarding important decisions.

The success of a project is inexorably linked to the success of the project manager. If project managers ignore the human aspects of project management, they soon won't have a project to manage. •

## Choosing the right manager for your special project

*Six interrelated 'soft' skill characteristics are important to look for in a candidate to manage your company's project*

BY RALPH L. KLIEM

**H**as this happened to you? You've made your software wizard the project manager of your latest software development project, but things are not going well: The project is late and running over budget. The project manager says he can get the project back on track, provided he receives more money, time or manpower.

Somehow, upper management believes him. The problems, however, don't go away. Instead, they increase. Disputes arise that indicate the presence of poor morale. Employee turnover and absenteeism increase. Consequently, the project manager falls into serious disfavor with top management and has to start looking for a new job. You're not so sure your job is secure, either.

In situations like this, the problem may not be the project. More often than not, technological wunderkinds can become managerial disappointments. Selecting the right person to be a project manager goes beyond looking for technical prowess. Often, a successful technician lacks the experience and training in "soft" skills, such as interpersonal relations and communication, that are crucial for a project manager.

What are the soft skills your next project manager should possess? They fall into six closely interrelated categories: communications, group management, interpretive, crisis management and gestalt.



**Communication skills.** Project managers should have strong written and oral communication skills. They must be able to write a simple, clear document, such as a memo or policy statement, to clarify or resolve complex issues.

A lack of communication skills may be the result of a technical education that placed little emphasis on writing or public speaking skills. Or perhaps the reason may simply be a lack of self-confidence.

Regardless of the reason, many project managers whose background is highly technical may be especially wary about communicating on nebulous issues that do not have black-and-white solutions. Without the persuasive communication skills key to making decisions when the outcome is not clear-cut, these project managers may be

at a loss. Many times, therefore, vital issues may be ignored. This leads to poor communication among employees up and down the chain of command.

When this information link deteriorates, it endangers the project.



**Group management skills.** Good project managers need to have a clear concept of teamwork. Poor ones see each staff member as an instrument of production, not as a human being who needs to feel a close association with the project and his peers.

Building group cohesion is especially imperative in an information systems environment because each staff member works as an independent specialist.

If communication among team members deteriorates, the group becomes nothing more than bodies working to develop a product. The upshot is duplication of effort and frustrated employees, which leads to low morale.



**Interpersonal skills.** Project managers must know how to relate to people and motivate them to action. Too often, project managers lack interpersonal skills, perhaps because they concentrate on the technical aspects and forget that people play an integral part in a project.

Nothing hurts a project more than the project manager's inability to relate to his people. Without that ability, projects can come to a standstill. Employees will think the project manager does not care about them as individuals and does not feel they play an integral part in the project's success. The project manager must have the capacity to get the employees to understand their roles. Without interpersonal skills, the project manager will find that task extremely difficult.



**Interpretive skills.** A project manager should be able to take data from a number of sources, convert it into information and determine its impact on the project. Many project managers fail to assimilate the wide variety of financial, schedule and personnel information that comes to them. Instead, they rely on one or two indicators and hope these will serve as a North Star to guide

them through a stormy project.

Other indicators are just as important. Personnel indicators (tardiness, bad attitude and so on) may point to a dissatisfied staff, which could signal that excessive turnover is imminent. That can damage a project just as much as poor technology or a bad financial situation.

Often, poor project managers will use only those indicators they can measure. In this way, a project manager who concentrates on technical problems often sees interpersonal and communication skills as insignificant simply because they are not directly quantifiable or easily definable. Consequently, such problems gradually accumulate until a major crisis arises.



**Crisis management skills.** Things do reach a boiling point sometimes, and it serves a project well to have a person in charge who can handle such crises. Many project managers fail because they do not have the ability to handle crises, especially nontechnical ones dealing with budget or personnel. Implementing Band-Aid solutions works only for a while. Soon, problems surface in other areas, including the technical. The poor project manager becomes preoccupied with one problem after another until he is inundated.



**Gestalt skills.** The project manager who will be successful is the one who takes a gestalt ("holistic") view of a project — from technical to financial to human resources and so on. One way to ensure project failure is to concentrate on only some areas. All areas are important, interrelated and required for a project to be completed on time and within budget and original specifications.

Many project managers lack a gestalt viewpoint because their experience and education have prepared them to become specialists. Once in managerial positions, many cling to their specialty, thinking it will make them successful once again. But being a superb programmer does not make one a superb project manager.

All project managers should have the right hard skills: statistics, scheduling, estimating, budgeting and computing. But they should have the right soft skills, too. When selecting an IS manager, management should place equal emphasis on both. •

# COMPUTER INDUSTRY

## NATIONAL BRIEFS

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► The legal action that shook the computer leasing industry early this year — IBM Credit Corp.'s lawsuit against third-party leasing player Comdisco, Inc., challenging the legality of subleasing and reconfiguration practices that many industry observers noted were by no means restricted to defendant Comdisco — might yet get its day in court but not in IBM's court of first resort. The *Delaware Chancery Court* early this month ruled that it lacks jurisdiction over the controversial case.

### Big

► Only months ago, Clearpoint Research Corp. rushed to reach an out-of-court settlement with IBM on charges similar to those brought against Comdisco (see preceding brief). Clearpoint, by its own admission, handed IBM a virtual win because the \$70 million company sized itself up as too small to wrest anything but a Pyrrhic victory from Big Blue. Last week, the Hopkinton, Mass.-based IBM-compatible memory maker's strategy appeared to be "Don't get mad — get bigger." Clearpoint proposes to swap most of its assets for a controlling stake in Irvine, Calif.-based *Distributed Logic Corp.*, which manufactures peripherals primarily for the *Digital Equipment Corp.* market.

## Q2 earnings to prompt questions, not answers

BY NELL MARGOLIS  
CW STAFF

Second quarter 1991 in the computer industry, where recession and restructuring continue to take their toll, was no joke — but we are likely to look back on it as a cartoon, according to analysts.

Not just any cartoon, but the one in the July 1 *New Yorker* in which a bespectacled businessman, poised at a podium with nosediving earnings charts visibly mounted on the wall behind him, delivers to assembled stockholders what is fast becoming an emblematic '90s message:

"I want each of you on the way home to stop, look up, ponder the heavens and consider how insignificant our second-quarter loss really is."

Last week, attempting to draw some guidance from the second-quarter earnings results pouring forth from technology firms, analysts echoed the sentiment. For different reasons, many are arriving at the same conclusion: In a business climate in which emphasis is shifting to long-term strategizing on firms' parts and corresponding patience on the parts of those who scrutinize their actions and in

### Second-quarter earnings 1991

*Even the good news could be bad: As recession and restructuring continue to batter bottom lines, analysts worry that some of the brighter reports indicate problems to come*

Company	Revenue April through June 1991	Percent change from 1990	Profit April through June 1991	Percent change from 1990
Cabletron Systems, Inc.	\$60.6M	71%	\$12.2M	72%
Motorola, Inc.	\$6.4M	10%	\$1.2M	10%
Cypress Semiconductor Corp.	\$75.1M	40%	\$10M	18%
Intersil Corp.	\$12.2M	19%	\$2.0M	20%
NCR Corp.	\$1.6M	(3%)	\$99M	(14%)



CW Chart: Janell Genovese

which the pace of change is accelerating from rapid to frenetic, quarterly results may be better plumbed for meaningful questions to ask than for answers.

"What we've already been warned about by some companies, and what we'll see more of [as companies post their results], *Continued on page 82*

## Revenue loss flags end to Convex luck

BY ELLIS BOOKER  
CW STAFF

RICHARDSON, Texas — Winning streaks in business, as in baseball, are thrilling to watch but doomed to end sometime.

For supercomputer maker Convex Computer Corp., the streak will end July 26. On that date, the firm expects to report flat or decreased revenue for the quarter ended June 30, as well as net income at the break-even to slight loss level. Although no catastrophe, this will mark the high-flying firm's first red ink in 26 consecutive periods.

Industry analysts said the downturn reflects a classic product migration dilemma: a new product line putting pressure on

the gross margins of an existing line.

The new offering is the C3, a supercomputer family announced in May and Convex's boldest attempt yet to broaden its "mini-super" line into the high-performance territory now held by Minneapolis-based Cray Research, Inc.

"Being late on the C3 didn't help the situation," said Gary Smaby, president of Smaby Group, Inc., a supercomputer consultancy in Minneapolis. Convex is at least six months behind its publicly released schedule on the C3, he said.

Clearly alluding to the delays, Convex Chairman, President and Chief Executive Officer Robert J. Paluck said the full produc-

tion availability of these systems "is our highest priority and is the key to returning Convex to a satisfactory financial performance."

But Paluck said he expected



improvements in the fourth quarter with increasing sales of the midrange C3400 and high-end C3800.

The firm's only source of sec-

ond-quarter revenue was the en-

try-level C3200. Confirming analyst comments regarding the pressures caused by the new line, Convex said that gross margins for the second quarter will fall below 50%. Still, Paluck cautioned that there remained some "risk" for these introduction schedules.

That caveat worries Smaby, who noted the fourth quarter is typically the biggest for supercomputer suppliers.

"If they aren't able to get the product out the door and ship it, then there is a chance for real trouble," Smaby said.

Founded in 1982, Convex has had profitable operations since the fourth quarter of 1985. Cash and investments at the time of the March 31, 1991 report were more than \$95 million. The company claims an installed base of more than 900 systems.

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Communications Systems Technical Conferences	October 14–18, Miami Beach, FL November 11–15, Dallas, TX
Data Centers of the '90s: Hardware/Software Maintenance and Consolidation	November 5–7, Chicago, IL
DB2* Technical Conference	October 6–11, Chicago, IL
IMS Technical Conference	December 3–6, San Diego, CA
Large and Storage Systems Technical Update	October 15–18, Gaithersburg, MD
Large Systems Performance Conference	October 22–25, Poughkeepsie, NY
OS/2* Technical Seminar	September 9–13, Newport Beach, CA
Management Conferences	Date and Location
Executive Management Conferences, "Creating World-Class Capabilities"	August 14–16, Philadelphia, PA (Wharton School) November 6–8, Orlando, FL

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# Hong Kong IS rides outsourcing wave

BY DON TENNANT  
IDG NEWS SERVICE

HONG KONG — The explosion of outsourcing in the U.S. is beginning to capture the attention of a Hong Kong marketplace that so far has shied away from releasing tight control of internal information systems operations.

The idea of calling on outside sources for data processing assistance is nothing new to Hong Kong. Calvin Fung, director and general manager of computer services company Col Ltd., pointed out that his company has been providing bureau

services — specialized data processing functions — for other firms since 1972.

The company now has 50 to 60 bureau customers, he said, for whom a variety of services are provided on a time-sharing basis in Col's own data center.

Col runs retail banking applications for United Chinese Bank, Hong Kong Chinese Bank and Mitsubishi Bank Ltd. In addition, it develops investment management systems that it runs in the data center for a clientele that includes securities firms

Schroders Asia and Banque Indosuez. Some 70% of Col's business now comes from this type of bureau activity.

While outsourcing competition appears to be heating up, Fung said Col faced more extensive competition in the 1970s. During that period, he said, more bureau services companies set up shop to take advantage of what was then a general lack of computer expertise, a lack that in turn made it difficult for firms to manage their computer operations internally.



The resurgence came in March 1989, when U.S.-based outsourcing giant Electronic Data Systems Corp. (EDS) came to Hong Kong specifically to take over the systems management operations of the International Bank of Asia (IBA).

According to Earl McKinzie, managing director of EDS Hong Kong, the deal with IBA is a 10-year pact. He declined to disclose the value of the contract. The local EDS office recently landed another deal with Cathay Pacific Airways, which calls for EDS to run Cathay's cargo handling system on a Stratus Computer, Inc. Series 1 machine in the EDS data center. Again, McKinzie declined to reveal the value of the deal, but he noted that EDS is actively pursuing other prospects in the local airline industry.

## Asian Initiative

EDS first moved into Asia in January 1986, when it started an Asia-Pacific regional headquarters in Japan. The company now has around 300 employees in Asia, having set up offices in Australia and Singapore, and has established joint venture operations in Taiwan and Korea.

In addition to the IBA and Cathay accounts, EDS Hong Kong handles all credit-card processing for the Hong Kong branches of the Bank of Credit and Commerce.

Still, according to McKinzie, outsourcing has yet to really catch on in the territory. Outsourcing "is a new concept here" in contrast to systems integration, EDS' other forte, he said.

New concept or not, McKinzie acknowledged that there are other established players around that he has to contend with, including Col. "We have competed against them," McKinzie said, adding that he expects to "run into them more and more."

IBM, EDS' biggest competitor in the U.S., "claims to be doing something" in Hong Kong, McKinzie said; exactly what is unclear. A spokesperson for IBM China Hong Kong refused to say whether the firm has outsourcing customers here.

## Resistance remains

While outsourcing is clearly on the upswing, there is still much resistance to the wave, according to a recent survey by Calif.-based Input, Inc.

The survey of IS executives and managers at 55 Fortune 1,000 companies found that 75% of the companies have not even evaluated outsourcing as an option for IS functions. Input defines outsourcing as farming out all or part of a firm's IS operations for three years or more.

Even among respondents who have looked at outsourcing, "a lot of them were nudged into it by declining economic conditions," said J. P. Richard, principal consultant at Input's Vienna, Va., office. "We expected about 50-50; 75% is a big number," he said.

The reason for such resistance is that "they want to protect their own empires and rightly so," Richard said. "But within the next five years, I think, there will be a lot more pressure from financial executives to evaluate the option."

Joseph Lung, managing director of research firm Dataquest in Hong Kong, offered a similar assessment. Outsourcing is "not very common" in Hong Kong because "trade information is quite proprietary," he said. "People are reluctant to have a third party go through their files."

Tennant writes for Computerworld Hong Kong.

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# Oversight agencies neglect role of user satisfaction

BY GARY H. ANTHES  
CW STAFF

ARLINGTON, Va. — The U.S. Congress and government oversight agencies ceaselessly scold large federal systems integration projects for budget overruns and schedule lapses. However, program managers, relying instead on the criterion of user satisfaction, are more likely to see them as successes, according to a survey recently released by the Federal Information Systems Integration Committee of Adapso, the computer software and services industry association.

Committee members said the survey results bolster their long-standing contention that agencies such as the U.S. General Accounting Office — "It's never issued a favorable report yet," one said — ignore long-term user satisfaction and focus instead on cost and budget issues because they are easy to measure.

The survey results are based on interviews with government and vendor program managers of 11 completed systems integration projects, ranging from a \$42 million office automation project awarded by the U.S. Army to Boeing Computer Services to a \$443 million office automation job performed by Electronic Data Systems Corp. for the U.S. Department of Agriculture.

The survey was sparked in part by a report two years ago from the U.S. General Services Administration (GSA) that said complex federal systems integration projects are generally doomed to failure. In conclusion, the GSA called on agencies to break such projects into more manageable pieces.

"The report basically said there had never been a successful [information systems integration] project," said committee member Robert W. Steele, general manager of business development planning at Boeing Computer Services.

Program managers saw things differently. Six of the 11 government managers said their projects "have realized or will realize everything that was intended initially"; three said they actually got more benefits than had been anticipated. Even the downsides were mild: Two managers said "expected capabilities have not been realized," and three said their projects had taken longer than expected.

The survey asked both government and contractor managers to say what factors defined a project's success. User satisfaction was cited most frequently, with six of 11 government managers mentioning it and eight of 11 vendor managers pointing to it. Budget and schedule criteria were cited by just two government managers each and by three vendor managers each.

A number of survey respondents said contractual red tape hampered efforts to change a project's scope to fit changing user needs. Walter C. O'Neill, special assistant for federal policy at IBM, said evaluation of project performance should focus on how well the agency managed change, not on whether there was a change in the budget.

"By doubling the budget, maybe you tripled the benefit," he said.

Survey respondents cited these key

factors as critical for success:

- High-level commitment and support within the agency.
- User involvement in the design and implementation process.
- Contractual flexibility to accommodate change.

These factors suggest some advice to his colleagues in the systems integration business, O'Neill said. "Where projects have failed in the past, maybe industry failed to foster these conditions."

## Measures of success

	Contractor	Government
User satisfaction	73%	54%
Requirements satisfied	54%	18%
Program on schedule	36%	18%
Program within budget	27%	18%
Upgrades can be accomplished	27%	18%
Contractor earns profit	18%	0%
Funding maintained by agency	18%	0%
Agency's mission supported	9%	9%

Percent of respondents who identified each category as critical (Base: 11)

Source: Adapso

CW Chart: Janell Genovese

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## Earnings

CONTINUED FROM PAGE 79

is that product transitions and troubled world economies were still the major factors," said John B. Jones, an analyst at Montgomery Securities.

Duff & Phelps Investment Research Co.'s systems firms analyst Martin Resinger agreed. "Whatever this pall in the industry is, we're still waiting for it to lift," he said. "Now we're starting to be worried not so much about how companies did last quarter, but about what kind of structural damage we might see in some of them when the recession does roll back."

"We can all forget about the June quarter," said William Milton, who follows large semiconductor firms for Brown Brothers Harriman & Co. "For the most part, it was booked back in April — it's history."

Unlike the case in the systems and software arenas, where analysts are concerned that recession-battered bottom lines may not bounce back when the economy brightens, he said, semiconductor firm watchers are wary of second-quarter glad tidings that bring more joy than comfort.

"Take Intel," he said. "Second quarter was outstanding — there's no other way to say it. But that's not really the issue." What is? "The possibility that we're facing an inventory glut," Milton said. Intel Corp. racked up its second-quarter triumph during a period of short supply, he noted — but recent signs such as a sharp drop in gray-market semiconductor prices indicate that the shortage is over. What is more, since customers are reluctant to admit that they are stockpiling inventory, "it's hard to tell how much is in their hands until it's too late," Milton said. "And if there is a 386 glut, for instance, it will surely affect Advanced Micro Devices; their fate could hang on it."

### Mixed bag

In the communications arena, too, the information value of second-quarter bottom lines is muddled if not moot, said John Rohal, an analyst at Alex. Brown & Sons, Inc. In fact, economic hard times cast a favorable light on communications companies, he said, because connecting the computers already in place appeals to customers as a cost-efficient alternative. Therefore, one of the questions to bear in mind when looking at second-quarter sales increases from communications firms, Rohal said, is to what extent they are buoyed by recession-induced customer conservatism — and how likely is the particularly hard-time advantage to survive when the economy rebounds?

For example, smart-hub vendor Cabletron Systems, Inc. "benefited from the recession in that their aggressive pricing strategy played to receptive ears," Rohal said.

Providing solid products at a nice price is a premise that promises to play in good times as well as bad. However, he cautioned, the same is less certain when it comes to another factor that has helped Cabletron grow during the recession: the firm's direct sales force.

"In hard times," Rohal explained, "a direct sales force can be an advantage. The company has a lot more tight control over its own sales force and can move more flexibly and quickly to respond to customer needs."

### EXECUTIVE CORNER

## Andersen names managing partner

Carla J. Paonessa has been named managing partner of **Andersen Consulting**'s change management services division. Before joining Chicago-based Andersen in 1979, Paonessa directed training and development projects at government agencies including the Internal Revenue Service and the Federal Aviation Administration. She succeeds Richard D. Johnson, who is retiring.

Early this month, **Sun Microsystems, Inc.** continued the realignment of its management team that began this past spring to better target the firm's efforts

at discrete customer groups. Former Sun Chief Financial Officer William J. Raduchel becomes vice president of corporate planning and development and chief information officer. Succeeding Raduchel at the CFO's post is Kevin C. Melia, formerly vice president of operations. In addition, former vice president of human resources Richard W. McQuillen steps up to the newly created position of vice president responsible for manufacturing, procurement and product delivery.

AT&T announced early this month that

Ian Ross, president of **AT&T Bell Laboratories** since 1979, will leave that post to take on responsibility for helping the telecommunications giant leverage its technical strength globally. Succeeding Ross at Bell Labs is John S. Mayo, former senior vice president for network systems and services.

Database software player **Oracle Corp.** recently named Craig A. Conway senior vice president of marketing. The 36-year-old executive has been an Oracle vice president since 1985, serving the firm in a variety of sales and marketing positions. In his new role, which includes membership on Oracle's Management Committee, he will manage corporate marketing activities worldwide.

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## Daimler-Benz eyeing Sogeti

*Sees 34% stake as launchpad to computer services market*

PARIS — German automobile and aerospace manufacturer Daimler-Benz AG is looking to launch itself into the computer services market with the purchase of a 34% stake in Sogeti, the French holding company that controls France-based services players Cap Gemini Sogeti (CGS) and Gemini Consulting Group.

Prices for the deal currently under negotiation were not disclosed. However, based on the April 1991 market price of Sogeti stock, the purchase price could fall in the \$438.6 million ballpark.

Sogeti currently holds 58% of CGS,

the leading software and services group in Europe and reportedly No. 4 worldwide. The 34% share would increase overall capital to approximately \$209 million. As far back as October 1989, Sogeti indicated that it was starting to look for new shareholders who could help it to expand and consolidate its leading position in the rapidly evolving services field.

The deal, if consummated, would also catapult Daimler-Benz into the European outsourcing market, which is quickly becoming a hotly contested niche.

In addition, the talks are expected to

lead to the creation of a German joint venture between CGS and Berlin-based Debs System Haus to offer each other's services and collaborate through CGS' existing networks elsewhere in Europe. Their respective managements will remain separate, according to the firms. Debs System Haus is part of Daimler-Benz's general services unit, Daimler-Benz Inter-Services (Debs).

According to a report in the French business press, Sogeti President Serge Kampf said that CGS' activities would not compete with those of Debs in Germany. "Debs' activities are complementary with those of CGS," he said. "[Moreover], Debs focuses above all on the internal needs of [Daimler-Benz]."

According to Sogeti, discussions with

Daimler-Benz could lead to other partners taking stakes in Sogeti. The firm did not elaborate. However, it indicated that it was open to alliances with U.S. and Japanese partners.

A Sogeti spokesperson said that the final agreement with Daimler-Benz and its Debs subsidiary could be concluded within a few weeks.

In the last year, Sogeti spent \$318.4 million to acquire control of the UK's largest computer services group, Hoskyns PLC, and \$62.4 million to buy Germany's Scientific Control Systems.

With about 20,000 employees, CGS expects to see its revenue increase from \$1.5 billion to about \$1.9 billion this year.

*Written by the IDG News Service, European bureau.*

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## INTERNATIONAL BRIEFS

### Bull bailout in question

► The European Commission has opened a formal investigation into the \$1 billion in French government subsidies planned for the state-owned electronics giant Compagnie des Machines Bull, according to a report in the French business press. The Brussels authorities, said a commission spokesman quoted in the report, have given the French government "a terribly flexible" two months in which to provide detailed information about the aid package and the planned restructuring of the troubled Bull, which has been suffering major losses since 1989. In 1990, Bull lost \$1.1 billion.

### Chances are . . . not

► Chances of achieving a broad-based international agreement that sets out high standards of software copyright protection look increasingly dim, a senior European Commission official told the French business press. When the Uruguay Round negotiations on intellectual property rights resume in mid-September, he said, outstanding problems are likely to keep the negotiators from reaching an agreement by year's end.

### Low blow

► SD-Scicon, a British software consulting firm, has mounted a rear-guard action against Dallas-based Electronic Data Systems Corp., and its attempt to take over the UK firm. Early this month, EDS bought a 25% stake in Scicon in preparation for a full-scale takeover bid. However, Scicon told the British business press that it believes some 48% of its shareholders will reject the hostile \$121 million bid as too low.

### Chinese expansion

► Unisys Corp. announced earlier this month that its first equity joint venture in China began operations in May. Meanwhile, IBM's Chinese software joint venture, The International Software Development Co., is now up and running in Shenzhen, China. The IBM effort is a \$2.2 million venture co-financed by IBM China/Hong Kong, the Bank of East Asia and Shenzhen University Software Development Corp.

# COMPUTER CAREERS

## Sharp marketing skills a must for consultants

BY JANET RUHL  
SPECIAL TO CW

**I**ndependent consulting during an employment drought may look as refreshing as a sparkling pool of water at the end of a desert hike. But what many information systems professionals don't know is that if they don't develop crackerjack marketing skills from the start, their consulting business will be nothing more than a mirage.

Unfortunately, few IS professionals have experience in the subtleties of marketing. As a result, new consultants often tend to base their marketing campaigns on strategies that fail to deliver.

The most common mistake is to place an advertisement in the Yellow Pages, according to seasoned veterans. These ads usually generate calls only from office equipment salespeople and from people hoping to get free computer advice.

### Attracting wrong calls

Ads in newspapers with large circulations aren't any more effective. Consultants say that such ads usually prompt calls from out-of-work programmers who are looking for jobs.

Additionally, almost all con-

sultants report that the old fallback of mailing out a resume along with a cover letter announcing their new consulting practices will rarely produce any leads at all.

There are marketing techniques that do work. According to those in the business, the following are some of the most effective:

- Networking with businesses and other consultants.



- Sending periodic newsletters.
- Delivering presentations or hosting seminars.
- Continuing to market your services throughout your consulting career.

The most effective way to guarantee continued employment is to reach out to businesses and the people around you.

For example, Paul Ferrara, the owner of Columbussoft, a Columbus, Ohio, firm specializing in business-related database appli-

cations, found that forming relationships with salespeople at local computer and office equipment stores helped generate many referrals to his business.

"Offer to be a technical resource for whatever hardware and software you know well," he suggests. "Also, offer to field occasional phone calls from their customers directly."

### Using your contacts

Establishing good rapport with other consultants can also prove to be a boon for business. Many consultants mistakenly treat consultants who specialize in a niche similar to their own as competitors.

But if professionals build relationships with these consultants by exchanging technical information or by helping them solve tricky problems, the "competition" will be more likely to pass your name on to a client when they are booked up.

A newsletter — whether consultant-written or purchased from a vendor — can be an effective consultant marketing tool. But consultants who have gone this route warn others not to begin a newsletter unless they are prepared for a long wait.

For example, Esther Schindler, an owner of Natural Intelligence, Inc. in Deer Isle, Maine, has been mailing a newsletter for a year. Though many of her clients mention that they enjoy receiving her newsletter, she has found that it often takes nine months before a recipient calls

her with a business need.

One costly mistake consultants can make is to send out their newsletters to too many people.

Burt Johnson at Mindstorm, Inc. in San Francisco limits his newsletter to a small list of pre-qualified leads — prospects he has spoken with and who he has determined are in a position to contract work or influence the choice of service providers.

Giving seminars and presentations at professional gatherings is also an effective marketing strategy for new consultants. But it isn't enough just to appear on the podium: A consultant must also follow up on the contacts made on the lecture circuit to turn them into paying work.

Bob Schenot, a consultant at Compass/New England in Portsmouth, N.H., has made valuable client contacts by teaching university courses and giving seminars under the aegis of The American Management Association. He says that he has generated contracts simply by calling attendees three weeks after the seminar ended "just to chat." During these phone calls, the seminar attendees frequently respond when Schenot offers to step in and help them complete their projects using the tools and technology he taught them at the seminar.

But most important of all, consultants must remember that

marketing is an ongoing process — even after the business is well under way.

### A full-time search needed

Experienced consultants say that many professionals make the mistake of marketing their services only when they are facing an empty schedule.

"I found out years ago that if I

**T**HE MOST  
EFFECTIVE way to  
guarantee continued  
employment is to build  
ongoing relationships with  
key businesses.

only sent out letters when I was looking for work, it gave the impression that I was always hungry. Even though they only heard from me every six months or so, clients had the impression that I was never working," Johnson says.

Johnson now mails out a monthly newsletter that he purchases from a vendor and includes with it a cover letter that briefly describes his current projects. Only once every few months does Johnson's letter indicate to potential clients that he is interested in taking on new work.

Ruhl is a consultant and programmer in Connecticut and author of *The Programmer's Survival Guide: Career Strategies for Computer Professionals*.

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# Finding a high salary and happiness

**Fast Track** is a twice-monthly column dedicated to answering questions on career directions.

BY STEVE MCMAHAN  
SPECIAL TO CW

**Q**I've spent the past six years in software development. I am paid well, but I'm not happy. I don't want to move into management, and I'm tired of coding. I've considered a career change, but I would have to take a pay cut. Any suggestions?

*Initials and town withheld*

**A**Many people moved into the information systems field over the last decade, attracted by the glamour, growth and high salaries. Now, some find themselves trapped in high-paying jobs they hate.

Your best hope of retaining a high salary is to find a position that capitalizes on your current technical skills but applies them in a different setting. Focus on positions in customer or user support, training, marketing or consulting. These positions may require you to take a pay cut — at least in the short term — but you'd still earn more than starting over in another field.

**Q**I'm currently a systems manager at a health claims administration firm. I'd like to get into management consulting or systems analysis working with a firm that uses an integration of micros and mainframes. Can you recommend a course of action?

K. F.  
Canton, Ohio

**A**You're heading in the right direction. The essence of this type of job search is to trade what you know for what you want to learn. Work on finding a firm that can capitalize on your current industry and technical experience while exposing you to the skills you need to develop: personal computer networking (preferably Novell, Inc. or Microsoft Corp.) and/or a major vendor's mini or workstation system (such as those from Sun Microsystems, Inc., Digital Equipment Corp., Hewlett-Packard Co. or IBM).

Once you develop this skill set, you'll be ready to move into consulting.

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A. M.  
Toledo, Ohio

**A**The demand for CBASIC people is quite limited. No matter how comfortable you may be with this technology, you need to move toward the world of C, Windows and graphical user interfaces, where the jobs will be in the future.

**Q**I am a communications and database systems programming consultant. I have 15 years' experience on large IBM systems but am concerned about the future for large-systems professionals. How can I leverage my skills to survive the future of downsizing and outsourcing?

*Initials and town withheld*

**A**With a strong background in mainframe database and communications, you're well-positioned. If you want to remain solely a mainframe person, you should go to a major facilities management or consulting firm. If you wish to remain in the end-user world, you'll need to broaden your skills to reflect the increasing diversity of the typical shop. Focus on building on your database and communications background by developing skills in the world of enterprise-wide computing, namely local-area networks, Simple Network Management Protocol and relational database management systems.

McMahan is managing director of the Boston office of Source EDP, a recruitment firm specializing in the placement of computer professionals.

*We welcome your questions. Send them to Cathy Duffy, Careers Fast Track, Computerworld, 375 Cochituate Road, Framingham, Mass. 01701, or fax them to (508) 875-8931. Letters may be edited for brevity and clarity. Your initials and town will be printed unless you request otherwise.*

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## TIP of the MONTH

*How do you keep your IS skills sharp?*

I keep current by reading industry publications. Every once in a while, I'll go to a trade fair. I also attend seminars on management and negotiations.

**Robert M. Kramer**  
Director of software development  
Student Loan Marketing Association  
Washington, D.C.



I'm a teacher and a lecturer, so that forces me to keep my skills sharp through reading and through interpersonal contact with others in the business. While I read, I think of how I can apply the material to my work.

**Jim Manara**, MIS manager  
Candle Corp., Los Angeles, Calif.

Reading articles on somebody who is doing something unique with technology, such as changing computer systems.

**Dennis Love**  
Vice president of information systems  
Acme Thread and Supply, Inc.  
Los Angeles, Calif.

I attend support groups at our systems and corporate divisions. They supply us with information on things we're looking into for our future, as well as things in research and development.

**Paul F. Summer**, MIS supervisor  
Owens-Corning Fiberglas Corp., Amarillo, Texas



Researched by Scott Kramer, a free-lance writer based in Irvine, Calif.



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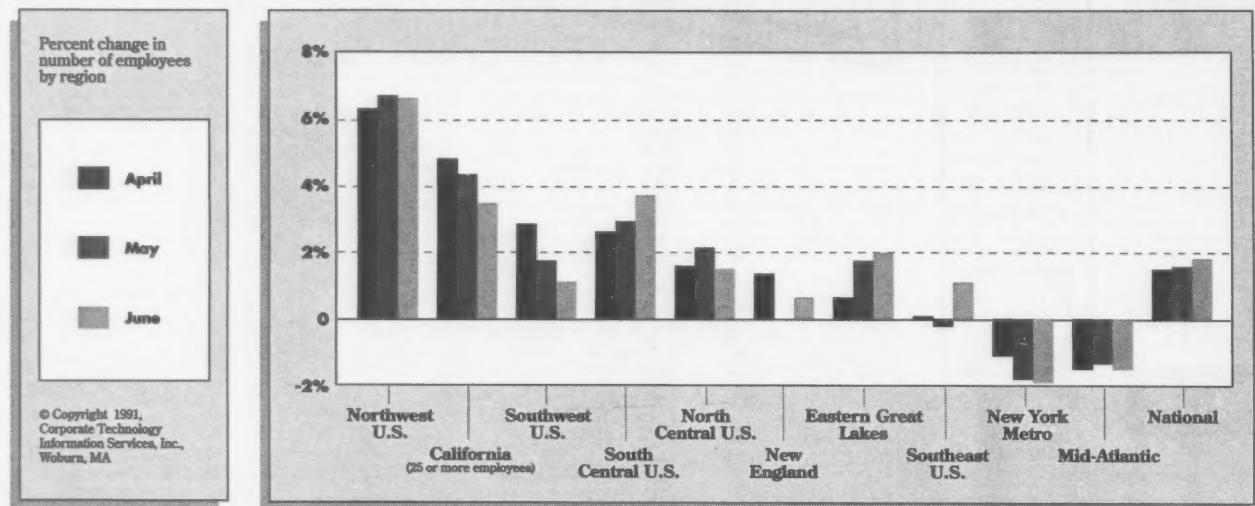
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sponses from students with the right types of backgrounds.

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# MARKETPLACE

## Why companies like shopping by mail

Better prices and expanded support services lure corporate purchasers

BY SUZANNE WEIXEL  
SPECIAL TO CW

**D**espite the security of buying computer equipment from established vendors, many information systems managers are making their bulk personal computer purchases through mail-order companies. Though they have to place the order without seeing the unit, these managers say the price advantages and support services make that a risk worth taking.

Traditionally considered a resource for sales to individual users, mail-order companies and direct distributors are starting to make inroads into corporate purchasing, where at least five systems are ordered at a time.

### Cost is one reason

Price is a strong motivator for buying through a direct channel, according to Stephen Clancy, associate director of desktop services at Ledgerway/Dataquest, a consulting company in Framingham, Mass. For cost-conscious businesses of any size, a savings of 10% to 20% per PC is nothing to walk away from. But price is not the only reason that Fortune

500 companies are making a change.

Direct outlets are working hard to lure corporate accounts, Clancy says. Many are expanding their basic service policies to include the following:

- Around-the-clock telephone support.
- Telephone lines dedicated to larger corporations.
- On-site or 24-hour turnaround service.
- Customized service plans that offer account representatives and strategic planning assistance.

At Harris Corp.'s Air Traffic Control Systems Division in Melbourne, Fla., looking for a vendor that was responsive and technically competent led engineering manager Ed Meisenbach to change from a standards-approved vendor to mail-order vendor Compuadd Corp.

According to Meisenbach, the recommended vendor was taking six months to diagnose and solve problems that Meisenbach thought should be cleared up immediately. A Compuadd advertisement that offered free, 24-hour turnaround service caught his eye.

"I don't have a lot of people to devote to PC repair. Compuadd takes care of things without a

hassle," he says.

For instance, when Harris installed Microsoft Corp.'s Windows 3.0 on a 50-unit network, the read-only memory BIOS chips in the Compuadd PCs did not work cleanly. Compuadd sent out 50 new chips, no questions asked, Meisenbach says.

### Technical savvy

Another advantage of going through a direct channel is that the technicians are extremely knowledgeable about the systems, says Jeff Sessions, manager of MIS at Pharmaco, Inc., a pharmaceuticals research firm based in Austin, Texas.

Before purchasing PCs from Dell Computer Corp., Pharmaco had gone through third-party retailers. The stores' technical and sales expertise were coming up short, Sessions says. Not only did the staff at Pharmaco usually understand the problems better than the staff at the retailers, but the retailers kept suggesting the wrong solutions.

"In a nutshell, they didn't know their products," Sessions says. At Dell, however, the sales staff and the technical support

staff know the computers inside and out, he claims.

To meet the need for fast, on-site service, some direct-mail operators have established strategic business partnerships with leading third-party service companies. Northgate Computer Systems, Inc., for instance, uses NCR Corp. to provide on-site service. Dell has an arrangement with Xerox Equipment Corp.

But according to Clancy, third-party service arranged through a direct-sales vendor is still third-party service. The technicians probably won't know the system as intimately as the telephone support staff does, although they may be better qualified to solve problems in a multivendor environment.

Often, large companies have their own in-house maintenance staff or third-party service contracts anyway. In such cases, suggests Lee Levitt, an analyst at International Data Corp., a market research firm in Framingham, Mass., compatibility and reliability are more important than vendor service.

For example, Celeste Capistran, director of information services at Hummeman Real Estate Corp. in Boston, has PCs from both Northgate and Zeos International Ltd.

Capistran calls the appropriate vendor's telephone support line in order to resolve problems. But, she says, her in-house staff is able to fix about 75% of the problems themselves. If the trouble is beyond their abilities, a third-party service company is called in.

### Direct sales drive

Direct sales companies must also convince customers that they are well-established and concerned about their customers. Corporations that are accustomed to building a relationship with a retailer or a marketing representative may not be comfortable with a faceless voice on the other end of the telephone.

As a result, some direct sales companies are going out of their way to develop the type of relationship large corporations have come to expect from their computer vendors.

For example, Northgate is working with Brunswick Corp. in Skokie, Ill., to establish a disaster recovery policy that includes immediate equipment replacement and on-site technicians to help in rebuilding. Brunswick is replacing its mainframe system with a PC network and, in the past two years, has purchased more than 100 systems from Northgate.

Weixel is a free-lance writer based in Framingham, Mass.



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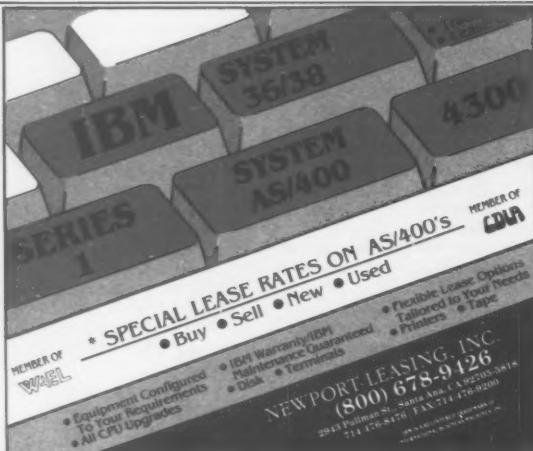
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	Closing price	Ask	Bid
IBM PC Model 176	\$200	\$450	\$200
XT Model 089	\$450	\$500	\$350
AT Model 099	\$600	\$675	\$500
AT Model 239	\$625	\$725	\$600
AT Model 339	\$775	\$1,000	\$700
PS/2 Model 30-286	\$1,150	\$1,300	\$1,000
PS/2 Model 60	\$1,300	\$1,700	\$1,300
PS/2 Model 70P	\$3,400	\$3,600	\$3,200
Compaq Portable II	\$700	\$1,050	\$700
Portable 286	\$1,100	\$1,350	\$1,000
SLT 286	\$1,700	\$1,900	\$1,550
Portable 386	\$1,900	\$2,100	\$1,500
LTE 286	\$1,700	\$1,900	\$1,600
Deskpro 286	\$800	\$1,000	\$700
Deskpro 386/20	\$2,150	\$3,000	\$2,000
Apple Macintosh Plus	\$750	\$975	\$700
SE	\$1,100	\$1,250	\$1,050
IIX	\$3,550	\$3,600	\$3,500
IICI	\$3,850	\$4,300	\$3,750
IIFX	\$5,300	\$5,800	\$5,200

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# INDUSTRY ALMANAC

## EARNINGS, EARNINGS EVERYWHERE

And they're off: Quarterly earnings reports rolled out in full force last week, weighing heavily on the minds of investors. IBM's second-quarter results — expected to be substantially less than the company reported for the same period last year — may have deflated enthusiasm for the happy tidings of other technology firms, analysts said. For example, Intel Corp. reported gains in both sales and profits last Wednesday, but its stock fell 1½ points that day to 44½.

The same day, financial statements from Borland International, Inc. showed the company to be right where it and Wall Street analysts anticipated it would be. However, Borland shares dropped ¼ of a point Wednesday to 48½.

Apple Computer, Inc. released bad financial news last Wednesday, in the form of a \$53 million quarterly loss. Although negative news was widely expected, the size of the loss shocked investors, who stamped Apple shares down 1¼ points Wednesday to 42½.

**What's next?** Rick Martin, computer systems analyst at Prudential Securities, Inc. in New York, assessed the prospects of companies expected to release earnings this week and next:

• **AST Research, Inc.** "Business remains very strong. The aggressive pricing strategy for its 486 computers continues to win market share. The company will probably ship in excess of 25,000 notebook machines this quarter."

• **Amdahl Corp.** "Sinking further into its product cycle trough. While a dozen new systems should ship by year end, the ramp-up of the new product line will probably not get under way until late in the first quarter of 1992."

• **Compaq Computer Corp.** "Feeling the pain of excessive dealer inventories in its first quarter, combined with a deteriorating U.S. personal computer market. While the quarter to be reported this week may be the worst comparison, I expect the next quarter to remain under pressure."

• **Control Data Corp.** "Results will probably be below previous estimates because it appears that a large order from the USSR has been deferred. Control Data still requires a major ramp-up in the second half of this year to achieve our estimates."

• **Unisys Corp.** "Will probably show a large loss in its first quarter, with revenues likely down 15% to 20% from a year ago. The restructuring of its revolving credit agreement [and] another round of layoffs and plant closings will further lower the company's break-even point."

• **Teradata Corp.** "Should be solidly in the black this quarter, as it enters the first full quarter of 486-based computer shipments."

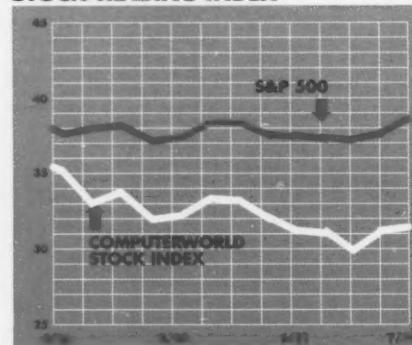
## RECOMMENDATION CHANGES

**DOWNGRADED FROM BUY TO OUTPERFORM:** Microsoft Corp. (Shearson Lehman Brothers, Inc.). Reason: Company remains a strong technology holding but does not warrant a buy rating; stock has reached target price, gaining 50% since late May — even considering the 3-for-2 split enacted recently.

**UPGRADED FROM SELL TO HOLD:** Chips and Technologies, Inc. (Prudential). Reason: Company cut staff by 5% to help bring expense growth more in line with revenue growth; although it lost money in recent quarters, the company should return to profitability by this time next year.

KIM S. NASH

## STOCK TRADING INDEX



## THIS WEEK'S HIGHLIGHTS

- More merger news in the software sector: Novell, Inc. announced that it will acquire Digital Research, Inc. Novell stock jumped up 2 points for the week, closing Thursday at 55. Meanwhile, Borland International, Inc. climbed 2 points to 49%, and Ashton-Tate Corp. inched up ½ of a point to 16%.
- Elsewhere, earnings news drove share prices. After Tandem Computers, Inc. said third-quarter profits were down compared with the corresponding time last year, shares slid ½ of a notch to 12%.
- Texas Instruments, Inc. added ½ of a point to 36% after reporting a second-quarter loss. Advanced Micro Devices, Inc. said quarterly sales and profits soared, but its stock dropped 1½ points last week to close Thursday at 11%.
- Digital Equipment Corp. advanced 4½ points for the week to 67, adding to the 2½-point gain of the week before. DEC has jumped almost 11% since July 1.

## Computerworld Friday Stock Ticker

CLOSING PRICES FRIDAY, JULY 19, 1991

TOP PERCENT GAINERS		TOP PERCENT LOSERS		Exch	52-Week	Range	July 19	Wk Net	Wk Pct	Change
Tandon Corp.	30.89	Seagate Technology	-29.75	OTC	10.25	4.00	ASK Computer Sys.	8.83	1.13	15.00
Recognition Equipment	21.28	Boeing & Babbage Inc.	-22.81	NYS	70.00	45.25	Auto Data Processing	70.00	1.75	2.56
LSI Logic Corp.	20.51	Dell Computer Corp.	-18.57	OTC	60.25	32.00	Autodesk Inc.	58.00	4.13	7.95
System Software Assoc.	18.31	Apple Computer Inc.	-16.90	OTC	31.50	13.50	BOC Systems Inc.	28.50	1.13	4.59
Western Digital Corp.	17.95	AST Research Inc.	-14.73	OTC	21.50	11.00	BMC Software Inc.	47.50	1.00	2.22
TOP DOLLAR GAINERS		TOP DOLLAR LOSERS		OTC <td>62.25</td> <td>14.00</td> <td>Borland Int'l</td> <td>11.00</td> <td>-3.25</td> <td>-22.81</td>	62.25	14.00	Borland Int'l	11.00	-3.25	-22.81
Digital Equipment Corp.	6.50	Apple Computer Inc.	-12.13	NYS	9.75	0.88	Boeing & Babbage Inc.	58.50	0.50	-4.88
Autodesk Inc.	4.13	Motorola Corp.	-10.75	OTC	19.85	5.13	Businessland Inc.	1.88	-0.13	-6.25
Intel Corp.	3.75	Symantec Corp.	-5.88	NYS	19.88	4.98	Cognos Inc.	19.50	0.00	2.63
System Software Assoc.	3.25	Dell Computer Corp.	-5.50	OTC	17.75	10.75	Computer Associates	8.88	-0.38	-4.05
United Telecom	2.75	Symantec Corp.	-5.25	NYS	71.50	36.75	Computer Horizons	13.25	-1.00	-7.02
Exch 52-Week Range		July 19 Wk Net Wk Pct Change		OTC	16.00	3.75	Computer Sciences	70.63	0.13	0.18
Communications and Network Services		Up 0.19%		OTC	16.00	3.75	Computer Task Group	10.38	-0.13	-1.19
OTC 19.00 5.38		3 COM Corp.		OTC	12.25	4.00	Corporate Software	12.38	1.38	12.50
OTC 87.75 52.00		Sunbeam Info Techs Corp.		OTC	85.00	22.00	Corel Corp.	46.25	0.25	0.54
OTC 44.75 29.00		AT&T		OTC	37.25	2.00	Lotus Development	28.88	0.88	3.13
OTC 6.75 0.88		Aerlit Communication Corp.		OTC	32.00	13.83	Micrographix	19.75	-1.75	-8.14
OTC 4.75 0.78		Bell Atlantic Corp.		OTC	116.75	50.75	Microsoft Corp.	107.25	0.00	0.00
OTC 4.00 1.75		GTE Corp.		OTC	45.00	4.00	Motorola Corp. Int'l	6.00	0.00	0.00
NYS 4.50 1.03		BellSouth Corp.		OTC	64.00	4.88	Oracle Systems	10.38	-0.63	-5.68
NYS 41.75 49.00		Comshare Systems		OTC	14.00	1.00	Panasonic Systems	12.13	0.00	0.00
OTC 25.25 8.00		Compression Labs Inc.		OTC	19.68	-1.88	Phoenix Technologies	8.63	0.00	0.00
NYS 41.25 23.38		Contel Corp.		OTC	41.00	0.00	Policy Management Sys.	31.75	-0.25	-2.81
OTC 5.13 1.88		Digital Switch Corp.		OTC	26.83	1.50	Porter Communications	21.38	0.25	1.18
OTC 26.75 8.88		Digital Comm. Assoc.		OTC	20.63	0.63	Qwest Software Inc.	10.50	1.00	10.53
OTC 21.00 12.00		Digital Equipment Corp.		OTC	21.00	10.00	SEI Corp.	24.00	0.00	0.00
OTC 12.28 5.50		Fibertron Int'l Inc.		OTC	36.25	12.50	Shared Financial Systems	21.00	1.63	8.39
OTC 4.00 1.75		Gandalf Technologies Inc.		OTC	21.00	12.25	Sharing Information Corp.	19.75	-1.75	-5.65
NYS 4.50 1.03		General Datacomm Inds.		OTC	52.00	12.00	Sterling Software	14.13	2.25	16.80
NYS 34.13 23.00		GTE Corp.		OTC	31.75	0.50	Sungard Data Sys.	16.75	1.00	6.35
OTC 5.75 0.78		ITT Corp.		OTC	26.00	9.50	Symantec Corp.	45.50	-0.25	-0.54
NYS 60.88 40.25		ITT Corp.		OTC	55.68	17.75	System Center Inc.	7.75	0.38	5.06
OTC 44.13 17.88		MCI Communications Corp.		OTC	28.63	1.00	System Software Assoc.	21.00	0.25	18.31
OTC 21.00 2.75		Microcom Inc.		OTC	23.83	1.50	Telepak Corp.	15.50	-4.13	-23.80
OTC 16.33 3.00		Motorola Equipment Tech.		OTC	21.00	1.00				
OTC 14.63 4.00		Network General		OTC	8.88	0.63				
OTC 15.50 8.13		Network Systems Corp.		OTC	25.00	1.13				
NYS 33.13 22.13		Northern Telecom Ltd.		OTC	32.88	0.25				
OTC 58.50 20.00		Novell Inc.		OTC	53.00	2.88				
NYS 59.00 20.00		Nynex Corp.		OTC	72.25	1.00				
NYS 47.88 36.25		Paradyne Telesys Group		OTC	41.25	-0.50				
ASE 15.38 4.50		Pentel Electronics Corp.		OTC	14.50	0.00				
NYS 29.13 8.88		Scientific Atlanta Inc.		OTC	16.75	1.00				
NYS 58.25 20.25		Siemens Ameritel Bell Corp.		OTC	54.00	1.00				
NYS 48.38 17.13		Siemens Bell Corp.		OTC	26.00	2.21				
NYS 40.75 32.38		US West Inc.		OTC	38.25	-0.88				
Computer Systems		Off 0.65%		OTC	13.88	3.63	Advanced Micro Devices	13.88	0.25	1.83
OTC 8.75 0.98		Alliant Computer Sys.		OTC	18.50	-1.13	Analog Devices Inc.	11.75	0.63	5.62
OTC 73.25 24.25		Apple Computer Inc.		OTC	60.63	-12.13	Atmel Corp.	12.00	-0.25	-2.04
OTC 13.88 4.25		Archive Corp.		OTC	13.10	0.13	Cambridge Corp.	15.00	-0.25	-1.64
OTC 32.75 7.50		AST Research Inc.		OTC	11.50	-14.73	Cognitronics Corp.	10.25	-1.25	-10.87
OTC 7.75 1.75		Avantek Corp.		OTC	11.75	4.13	Conner Peripherals	27.25	1.00	3.81
NYS 21.63 4.50		Commodore Int'l		OTC	11.00	-1.13	Coronet Corp.	10.63	0.13	1.18
NYS 74.25 35.50		Computer Automation Inc.		OTC	12.15	-2.63	CrossTalk Corp.	11.88	0.25	2.11
OTC 2.13 2.13		Control Data Corp.		OTC	13.00	0.63	Eastman Kodak Co.	43.38	1.88	4.52
NYS 21.13 6.75		Comshare Systems		OTC	11.13	-0.50	Everex Corp.	9.50	-1.13	-10.59
NYS 20.68 6.00		Comshare Systems		OTC	11.00	-0.50	Everett & Sutherland	21.00	1.00	5.00
NYS 51.25 20.00		Cray Research Inc.		OTC	24.75	-0.75	Extron Corp.	5.50	-0.25	-11.11
NYS 15.50 3.50		Data General Corp.		OTC	28.25	-0.75	IPF Systems Inc.	23.50	0.25	1.06
NYS 30.63 4.50		Digital Equipment Corp.		OTC	71.63	5.00	Apertus Technologies	13.00	0.00	0.00
NYS 36.13 9.50		Harris Corp.		OTC	28.50	0.75	Cambridge Corp.	15.00	-0.25	-1.64
NYS 53.00 24.88		Hewlett Packard Co.		OTC	13.00	1.38	Cognitronics Corp.	10.25	-1.25	-10.87
NYS 53.00 24.88		IBM Corp.		OTC	11.75	4.13	Conner Peripherals	27.25	1.00	3.81
NYS 11.00 1.00		Information Int'l		OTC	22.75	-0.75	Coronet Corp.	10.63	0.13	1.18
NYS 11.00 1.00		Intergraph Corp.		OTC	17.00	2.63	CrossTalk Corp.	11.88	0.25	2.11
NYS 3.00 0.00		Intergraph Corp.		OTC	11.75	4.13	Eastman Kodak Co.	43.38	1.88	4.52
NYS 149.75 11.00		Matsushita Electronics		OTC	12.75	0.75	Everex Corp.	9.50	-1.13	-10.59
NYS 126.25 10.00		Matsushita Electronics		OTC	17.00	2.63	Everett & Sutherland	21.00	1.00	5.00
NYS 17.00 1.00		Matsushita Electronics		OTC	12.75	0.75	IPF Systems Inc.	13.00	0.00	0.00
NYS 10.00 0.00		Memory Graphics Corp.		OTC	14.50	6.00	Apertus Technologies	13.88	-5.88	-27.75
NYS 98.75 22.50		Memory Graphics Corp.		OTC	24.25	0.50	Cambridge Corp.	14.38	3.75	9.97
NYS 36.75 4.50		Microplay Technology		OTC	27.25	-0.25	Cognitronics Corp.	10.25	-1.25	-10.87
NYS 34.00 9.75		Sequent Computer Sys.		OTC	18.50	2.00	Conner Peripherals	27.25	1.00	3.81
NYS 47.25 18.00		Silicon Graphics		OTC	39.38	0.50	Coronet Corp.	11.88	0.25	1.06
NYS 37.25 15.00		Stratus Computer Inc.		OTC	33.00	0.50	CrossTalk Corp.	11.88	0.25	1.06
NYS 28.88 8.88		Sun Microsystems Inc.		OTC	34.13	-1.00	Everex Corp.	4.50	1.25	30.89
NYS 39.50 23.50		Tandy Corp.		OTC	35.38	0.63	Everett & Sutherland	27.25	1.00	3.8

## Software

FROM PAGE 1

still stunned by two weeks of unpredicted deals, said last week that those scouting out the next PC software stunner should watch for the following:

• Large companies with holes in their product lines and niche players with proven technology. For example, Ashlar Vellum, a Sunnyvale, Calif.-based computer-aided design and manufacturing (CAD/CAM) start-up, would be an attractive buy, said Kenneth Wasch, president of the Software Publishers Association, based in Washington, D.C. "A company like Lotus or Borland or Symantec could buy them and bootstrap its way into a very lucrative CAD/CAM business."

• Troubled former highfliers. Software Publishing Corp., for example, has had its wings clipped by product problems. It is often named by analysts as a likely acquisition target and a likely buyer, as it seeks to add heft to its flagging product line.

• Any company that could be seen as a technological or strategic fit with Symantec Corp., whose chief executive officer, Gordon Eubanks, "is the king of

• Database companies. The standards-oriented, network-based strategies that many users are pursuing rely on bigger, easier-to-access, more secure databases. The technology is too complex to be picked up overnight, and many database companies are in trouble, said Richard Finkelstein, a consultant at Performance Computing, Inc.

Developing a small application (for example, a clipboard utility):  
12 to 15 months  
\$1 million to \$1.5 million

Developing a larger application (for example, a spreadsheet):  
18 to 24 months (24 is the norm)  
\$3 million to \$4 million

Developing a driver:  
12 months (on average)  
Less than \$1 million

Source: Windows/Presentation Manager Association

software acquisitions: very focused and very determined," International Data Group analyst Nancy McSharry said.

The deals will keep on com-

ing, analysts said, because the motivations for mergers are so plentiful.

The leading desktop software vendors are trying to make the huge jump from being tactical suppliers of individual productivity applications to being strategic suppliers for corporations, said Stuart Woodring, an analyst at Forrester Research, Inc.

Also driving the industry consolidation are users looking for one-stop shopping, in part to simplify complex and conflicting licensing and upgrade policies.

They are also buying Microsoft Corp.'s Windows 3.0 as fast

as retailers can stock the shelves. Hence, companies that initially snubbed Windows are desperate to buy Windows applications and tools before the technology window closes, said Jesse Berst, editor of the "Windows Watcher" newsletter.

"PC software technology is much more complex today," Moseley said. "Circa 1982, any code larger than 64K was considered inefficient. Now, Lotus [Development Corp.] can't fit 1-2-3 3.0 into a memory space 10 times that."

The corresponding leaps in development costs (see chart) are staggering enough to send many small players partner shopping, said Basil Malone, executive director of Windows/Presentation Manager Association in Santa Clara, Calif.

## Novell nets DRI in \$80M deal

BY JIM NASH  
CW STAFF

Novell, Inc. bought itself an \$80 million insurance policy last week.

The Provo, Utah-based networking giant reached an agreement to buy Monterey, Calif.-based Digital Research, Inc. (DRI), maker of the DR DOS operating system. The acquisition would be in the form of an exchange for 1.5 million shares of Novell stock, worth an estimated \$80 million. The deal is scheduled to be completed in October.

Industry observers said DRI is protection for Novell against claims by networking rival Microsoft Corp. that it will inject key features of its LAN Manager network operating system directly into OS/2 New Technology, its new desktop operating system now under development.

Novell can now incorporate its own features into DR DOS,



Novell President Noorda (left) and DRI President Williams plan to leverage DRI's DOS alternative

which is compatible with each of the 74 million DOS systems installed worldwide, according to Nancy McSharry, an analyst at International Data Corp. In this way, Novell can thwart what many said is Microsoft's last

marketing grasp for LAN Manager — tight integration into an operating system.

Some network administrators reacted cautiously to the news, saying they hope Novell does not neglect Netware in a bid to build the better personal computer operating system.

David Fairclough, a systems engineering specialist in electronic data systems at General Motors Corp. in Dallas, said he did not see obvious benefits for users, especially if Novell lost its focus on local-area networking.

Network managers are likely to benefit if Novell brings network management and con-

trol utilities to the desktop as part of DR DOS, analysts said. This early on, at least, it appears to be the only clear benefit for users, said Jonathon Rayna, vice president of data processing at United Group Insurance's Student Insurance Division.

Few observers expressed any doubt that Novell will hasten to bundle DR DOS into its Netware network operating system, potentially adding to DR DOS' 5 million current users.

Spokesmen for both companies emphasized their intention to remake DR DOS into an operating system that interacts with networks the moment it is loaded onto desktops. MS-DOS, designed before the onset of networking, does its best not to get in the way of networking functions carried out on PCs.

Peter Raulerson, president and chief executive officer of the consulting firm Para Technology, Inc. in Bellevue, Wash., said DR DOS is a "souped-up" version of Microsoft's DOS and can be enhanced to more efficiently handle multiple tasks.

Raulerson said MS-DOS stumbles between tasks such as database requests from several database servers.

### At a glance

**Digital Research, Inc.:**

- Monterey, Calif.
- 273 employees worldwide
- \$40.9 million in net sales (FY ended Sept. 30, 1990)
- Founded 1976
- Major products: DR DOS, Flex OS
- DRI has an estimated 10% market share in the DOS world

**Novell, Inc.:**

- Provo, Utah
- 2,729 employees worldwide
- \$49.7 million in net sales (FY ended Oct. 27, 1990)
- Founded 1983
- Major products: Netware 2, Netware 3
- Novell has an estimated 55% market share in the network operating system world

CW Chart: Janell Genovese

## Uniting of mainframe software firms in works

FARMINGTON HILLS, Mich. — There is still room for consolidation in the mainframe software market. Last week, Compuware Corp. announced it had reached an agreement to buy XA Systems Corp., based in Los Gatos, Calif.

Both companies provide programming tools geared to testing and maintaining applications running against IBM's mainframe database management systems and have competed in several areas. Both companies are privately held and did not reveal terms of the acquisition.

The agreement marks the second major acquisition in just over a year for Compuware, founded in 1973 as a professional services firm. In June 1990, the company bought out Centura

Software in San Jose, Calif., primarily to acquire that firm's debugging tools, Xpediter and Navigator, to complement its own debugging, file management and diagnosis tools.

Joseph A. Nathan, senior vice president of Compuware's Software Products Division, said XA Systems brings "smoother, easier interfaces" that will be applied to Compuware products. While there is some product overlap, Nathan said that currently competing products have complementary functions that will be merged.

Next month, Compuware will release a personal computer version of File-Aid, its file and data manipulation tool for programmers working with IBM's DB2, IBM and VSAM.

## Storage Tek seen buying

BY ELLIS BOOKER  
CW STAFF

LOUISVILLE, Colo. — Storage Technology Corp. is reportedly negotiating a stock-swap bid for IBM midrange remarketer XL/Datocomp, Inc., according to published reports.

Neither firm would comment on the stories, which appeared in the Chicago business press last week. But Hinsdale, Ill.-based XL/Datocomp did announce July 1 that its review of "strategic alternatives" included the possibility of a merger with an unnamed company in a stock-for-stock transaction.

The reseller has faced declining revenue since December, when it ceased to be an IBM industry remarketer and thus lost access to discounts for new IBM systems.

The tape storage maker, with \$1.14 billion in revenue last year, has pursued a variety of business relationships, including outright acquisitions, strategic alliances, equity investments and joint ventures, noted Debra B. Silversmith, an analyst at Boettcher & Co. in Denver. "It's not at all clear what they'll do in this case," she said.

Storage Tek would gain XL/Datocomp's 120 sales representatives in 60 offices in the U.S.

XL/Datocomp, with 1990 revenue of \$449.6 million, was once the world's largest remarketer of IBM midrange systems.

Significantly, more than 50% of the company's revenue in 1989 came from new IBM equipment sales. Today, XL/Datocomp gets no revenue from new IBM equipment sales.

## NEWS SHORTS

### Cray Research won't co-develop

Cray Research, Inc. is on track with its development of a massively parallel supercomputer capable of sustained teraflop performance by 1997. But the Eagan, Minn., company has decided not to develop the product in conjunction with another company, according to a letter sent to all Cray employees last week by Cray Chairman and Chief Executive Officer John A. Rallwagen. The company plans to deliver by 1993 a massively parallel, microprocessor-based system that works with its Y-MP supercomputer, he said. This first of three systems generations will exceed 100 gigaflops.

### Fleet/Norstar plans satellite net

Fleet/Norstar Financial Group plans to install a 600-site private satellite network to connect its bank branches in five states. AT&T Tridom will provide the very small-aperture terminal satellite network, which will connect branches in New York, Rhode Island, Connecticut, Maine and New Hampshire to Fleet/Norstar's host computers in Albany, N.Y.

### NCR puts user service on-line

NCR Corp. announced a service plan that will allow customers to handle common problems on their own. Solution Bank, which will be provided as a standard offering of the company's Software Services, gives users access to NCR service databases and an electronic mail facility to communicate with NCR staff members. One database will provide information on common problems as well as solutions to them. A second can be used to order products and services.

### PCs linked to Prime Information

Last week, Prime Computer, Inc. officially unveiled Hypersession, a data transfer tool aimed at personal computer users wishing to access the Prime Information database environment. The package allows PC users to query the database on a Prime midrange system and to cut and paste the downloaded data into applications such as Lotus Development Corp.'s 1-2-3 and Microsoft Corp.'s Word for Windows on the desktop.

### Microsoft plans Dallas center

Swamped by customers phoning in with DOS 5.0 and Windows 3.0 questions, Microsoft plans to open a product support center in the Dallas area in October. The support center will join others in Bellevue, Wash., and Charlotte, N.C.

### 10Base-T wins support

Ungermann-Bass, Inc. announced last week an enhanced version of its Ethernet adapter cards that includes 10Base-T and IBM 3270 support. 10Base-T is the most recent version of the Ethernet local-area network standard. It allows a LAN to run over unshielded twisted-pair wiring and presumes a physical star configuration through an intelligent wiring hub.

### Stardent to port visualization tools

Stardent Computer, Inc. in Concord, Mass., is scheduled to announce today that its Application Visualization System will be ported to the entire 4D series line of workstations from Silicon Graphics, Inc. The Application Visualization System is an interactive visualization environment that allows users to apply advanced visualization, graphics and imaging without graphics programming.

### IBM enters supermarket messaging

Chicago-based Videocart, Inc. has entered into strategic alliances with both IBM and Information Resources, Inc. in order to expand Videocart's electronic nationwide network for marketing message delivery. The messages are sent to strategic display screens on shopping carts. The agreement calls for the implementation of point-of-sale systems, software development and database-driven targeted marketing techniques.

# AT&T wins \$1.4B IRS contract, its biggest computer sale ever

BY ELLIS BOOKER  
CW STAFF

WASHINGTON, D.C. — AT&T won its largest computer contract ever last week, announcing that it has been selected to provide some 50,000 of its personal computers and 3,200 Unix servers to the Internal Revenue Service and other parts of the U.S. Department of the Treasury.

Winning the seven-year contract, worth an estimated \$1.4 billion, is an ironic coda to the sometimes disappointing seven-year history of AT&T Computer Systems.

In recent weeks, AT&T has begun the process of folding its own computer group into that of NCR Corp., the Dayton, Ohio-based computer maker that AT&T plans to acquire for \$7.4 billion.

#### Last hurrah

Savoring what may be their last hurrah before being integrated into NCR, AT&T executives emphasized that they had been working on the IRS bid for 2½ years, long before the plan to acquire NCR.

"We're awfully pleased ... We believe it proves AT&T is in the systems integration business

and is able to compete with the industry giants," said Frank Fiorina, director of sales and programs at AT&T's Federal Computer Division here.

AT&T beat out finalists IBM and the information systems division of Lockheed Corp.

Fiorina also revealed that talks with NCR's federal group had commenced but that no decision had been reached as to how or if the two organizations would be combined.

Fiorina noted that the two operations have really not competed much because NCR has provided more in the way of point-of-sale and automated teller machine systems to its federal customers.

"In some ways, it's very encouraging to say we haven't been competing," Fiorina said. "If, in fact, we merge, we'll end up with a much more robust organization."

AT&T's Federal Computer Division has about 400 employees today but will grow to about 550 as a result of winning the IRS bid.

Called the Treasury Multi-user Acquisition Contract, or TMAC, the award allows Treasury Department bureaus other than the IRS to buy the client/

server computer systems from AT&T.

#### Major contracts

AT&T now has three of the government's largest computer contracts.

The other two contracts are the U.S. Air Force's Standard Multiuser Small Computer Requirements Contract, which was awarded in October 1988 and is valued at more than \$1 billion, and the U.S. Department of Transportation's Office Automation Technology and Services Contract, which was awarded in December 1989 and is valued at \$850 million.

The IRS computer procurement is part of an \$8 million program to keep tens of millions of tax records on-line.

AT&T will provide nearly 50,000 of its Intel Corp. 80386-based PCs and 3,200 Unix servers.

The servers will be furnished by AT&T's main subcontractor, Pyramid Technology Corp. in Mountain View, Calif.

El Segundo, Calif.-based Computer Sciences Corp., which is another AT&T subcontractor, will be in charge of software integration and a range of professional services.

## 3B2 goes to RISC chip, boosts compatibility

BY ELLIS BOOKER  
CW STAFF

AT&T Computer Systems is scheduled to unveil today new models of its venerable Unix minicomputer line, the 3B2, and its high-end, multiprocessor Unix system.

The new R3 series, which had been expected, brings binary compatibility across AT&T's midrange and high-end platforms.

The 3B2, which was introduced by AT&T in 1984 and used in more than 60,000 sites, will move from its existing proprietary processor to a 33-MHz reduced instruction set computing chip from Mips Computer Systems, Inc.

The Mips chip is already used in AT&T's high-end, multiprocessor System 7000, made for AT&T by Pyramid Technology Corp.

In addition, both the 3B2/1000 R3 and the System 7000 R3 will get the latest iteration of the Unix operating system, Unix System V Release 4.

Analysts said the new models, which are slated to be available in September, deliver an attractive power boost — two to three times that of the 3B2/1000 R3 — and ought to keep 3B2 users content for a few more years until a migration path to NCR Corp.'s architecture is articulated.

"If the merger [with NCR] hadn't happened, this would have been the first step in a new product line," said David Card, an analyst at International Data Corp. in Framingham, Mass. "As it stands, it's a very graceful end of the line."

#### Price is the key

Some customers, however, said the attractiveness of the 3B2 upgrade will come down to its price.

"If it's less than \$15,000 to \$20,000, then yes, it probably makes sense in some cases," said Dan Amador, vice president of MIS at Hyatt Hotels Corp. in Chicago.

Hyatt is one of AT&T's largest commercial users of 3B2 and

has the system in virtually all of its 92 domestic hotels.

Amador said he is less sure about what to buy in the way of new equipment and wonders if the Intel Corp. i486 adopted by NCR is his future.

"We're very interested in hearing about that migration strategy to the NCR systems," he said.

James E. Clark, vice president of high-performance and fault-tolerant systems at AT&T, said last week that such a migration has already been accomplished within AT&T.

Clark said the company successfully migrated applications from its Intel-based Starserver/E server to the Mips-based System 7000 a year ago.

The 3B2 upgrade kit, comprising a single system board and the Unix System V Release 4 operating system, will cost \$22,900, according to AT&T. A new 3B2/1000 R3 ranges in price from \$49,900 to \$74,900. A new System 7000 R3 ranges in price from \$145,000 to more than \$1 million, depending on the number of CPUs.

Along with the R3, AT&T announced its first high-availability system last week. Called the System 7700, the product uses dual System 7000s that share redundant peripherals.

## ‘Telework’

FROM PAGE 1

Carol Nolan, Pacific Bell's telecommuting manager.

Nolan said Pacific Bell, a Pacific Telesis Group telephone company, has been operating two telework centers — one in Northern California and the other in Southern California — for five years.

Telework centers have most of the benefits attributed to at-home telecommuting, such as reducing urban traffic congestion and commuter stress, but tend to be more palatable to management because they are “real” offices, experts said.

The concept of satellite offices recognizes that telecommuting is not just working at home; it’s really about decentralizing the office,” said Gil Gordon, a Monmouth Junction, N.J.-based consultant on alternative work arrangements.

### More join in

Other examples of this mostly West Coast phenomenon include the following:

• In March, the Washington State Energy Office opened a 13-workstation telework center in Seattle. It is for state government employees who would otherwise drive 58 miles to the state capital in Olympia, and it

uses a local-area network gateway to the government’s private network.

• The state of California, under legislation passed last September, is raising \$600,000 in public and private funds to open telework centers by January 1992, according to David Fleming, the state’s telecommuting program manager.

• In Japan, where telework centers are embraced as a way to reduce congestion in big cities, companies such as Fujitsu Ltd. and Sumitomo Trust & Banking Co. recently formed the Satellite Office Association of Japan.

A telework center can have many forms. It can be an “open” center for multiple employers, a “closed” center for a single company or a branch office of a bank that has some spare desks for use by headquarters employees who live nearby. The cubicles can be used as a full-time office for one employee, as an office shared by two or more employees at different times, as an office used for telecommuting two or three days a week or as a drop-in site for traveling employees.

### Steady growth

Telecommuting guru Jack M. Nilles, president of Jala Associates, Inc. in Los Angeles, predicted steady growth for telework centers during the next 10

### Will telework work?

The trade-offs in setting up telework centers

#### Advantages:

- Boosts employee productivity because of lower absenteeism, fewer distractions and less stress from commuting.
- Competitive advantage in hiring and retaining employees.
- Employees like the work autonomy, reduced commuting costs and ability to spend more time with family.
- Office rental rates may be lower in the suburbs.
- Society benefits from less traffic congestion, air pollution and fuel consumption.

#### Disadvantages:

- Employee isolation.
- Initial capital investment.
- Managerial style changes.
- Employees not available for spontaneous meetings.

Source: SMS Research and Marketing Services, Inc.



CW Chart: Janell Genovese

to 15 years.

“There aren’t more of them now because it takes more planning to start a telework center than it does to have people work at home,” he said.

Some industry experts said they believe that telework centers will become the dominant form of telecommuting in the future, but obstacles remain, such as concerns about whether employees at satellite offices will be isolated from their managers — as well as from the fast track for

timely promotions.

Telecommunications consultant John Niles said he has been trying to start a telework center in Seattle but has run up against two common objections: Companies are wary of splitting up work groups to allow telecommuting, and companies do not want to pay for what amounts to a second office for employees who use the telework center just a few days a week.

Several of the existing telework centers have had special

breaks, such as state government appropriations, donated equipment and vacant office space, Niles noted.

Questions about how to sustain the government-funded centers and how much private employers will pay for space in telework centers must be addressed, Niles said.

### Seed money needed

“The government should provide some seed money, but eventually, these things need to become profit-making enterprises,” Niles said.

With many employers and real-estate developers sitting on the sidelines, the situation looks like a seventh-grade dance, with the boys on one side of the gym and the girls on the other, Gordon said. “It may take the government to help break the stand-off,” he said.

Nolan urged employers thinking about starting a telework center not to get bogged down in bureaucracy.

“Don’t get hung up on details and questions about supervision,” she said. “Supervisors can manage by results, instead of managing by watching people walk through the front door.”

## Suite deals

**N**ew environmental regulations in Southern California requiring companies with more than 100 employees to file transportation management plans to reduce pollution are starting to break down some of the corporate resistance to telework, according to Frank Cottle, executive vice president at Office Technology Group, Inc. in Richmond, Calif.

The firm developed and operates a high-technology building in Ontario, Calif., that merges the concept of “executive suites,” which provide shared secretarial services and conference rooms, with the concept of neighborhood work centers.

Cottle said the Ontario Comm Center — equipped with an Integrated Services Digital Network for voice and data communications — is strategically located about halfway between the business districts in the Los Angeles area and the residential communities in Western San Bernardino and Riverside counties.

About half of the building’s clients are “remote users,” Cottle added. They work at home most of the time, communicate by computer with the center’s secretarial staff and drop in to use the conference room for meetings.

MITCH BETTS

## SQL group heads for universal access

BY JOHANNA AMBROSIO  
CW STAFF

**N**EW YORK — Users frustrated by having to kludge together different database systems may be getting some relief. A group of vendors last week announced a specification that will be “the first step toward universal database access.”

The specification is intended to connect multivendor networks of relational databases that use the Standard Query Language (SQL). The specification will allow users to request data and receive it from any database management system or tool that adheres to the specification, backers said.

Users will probably have to wait at least a year, however, until products that incorporate the specification come to market. Furthermore, neither IBM nor Computer Associates International, Inc. have signed on.

The specification builds on

existing international standards, including SQL2, Remote Database Access and X/Open Consortium Ltd.’s Portability Guide. The SQL Access Specification is essentially an application programming interface for distributed databases; it includes enhancements to the existing standards.

Some of these enhancements include standardized system catalog names and diagnostic messages and a way for the databases that are communicating to respond to whichever level of SQL the other uses. The enhancements, in turn, have been adopted by standards organizations for inclusion in the next releases of their respective standards.

The SQL Access Group co-developed the specification with X/Open and is the specification’s primary promoter. SQL Access Group members include Microsoft Corp., Apple Computer, Inc., Digital Equipment Corp., Sun Microsystems, Inc., Ashton-Tate Corp., Lotus Development Corp., Oracle Corp., Software AG of North America, Inc. and Sybase, Inc.

The only user firm to have joined thus far is Du Pont Co.

### No other choice

“The reason we’re doing this is because we have to,” said Roger Sippl, chairman of Informix Software, Inc. and also chairman of the SQL Access Group. “Interoperability is the No. 1 item on customers’ agendas today.”

But it is not yet a truly universal method. “It’s a big step forward,” said Anthony Percy, vice president of Gartner Group, Inc. “It’s about 30% to 40% of what is needed, but it’s not the answer for everything.”

One issue is that neither IBM nor CA are members of the SQL Access Group, although both companies have their own plans to address this area. SQL Access Group members, however, said they represent about 70% of the relational DBMS market and that many options exist for connecting to IBM and CA products.

An IBM spokesman said his company had no comment on the SQL Access Group specification or on its own plans to connect to other vendors’ databases. Efforts to obtain a comment from CA were not successful.

However, IBM has been working on a project to provide simplified access for its own RDBMSs. The SQL Access specification does not take into account any of the older database architectures, such as hierarchical systems, and some of users’ existing relational applications may need to be reworked to function with the specification.

Still, users give a tentative thumbs-up to the concept. “I think it will be good for the industry long-term,” said John Chow, vice president of MIS at Herman’s Sporting Goods, Inc. in Carteret, N.J. “It seems like a great way for users to protect their investments.”

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## Not another motherboard announcement!

"Before you say to yourself, 'Not another motherboard announcement,' let's take a second to see if you've ever seen anything like this" — From an RD Labs press release.

## Goose eggs

Consumer advocates handed out awards for the Heroes and Zeros of Marketing, and high on the list of Zeros was the computerized dialing machine industry. It was cited by the Center for the Study of Commercialism in Washington, D.C., for invading homes and offices with obnoxious, recorded telemarketing calls.

Nextstep Release 1.0 under AIX but withdrew it from the market when Next announced Release 2.0, which featured added niceties such as color. In September, IBM said it would move to Nextstep 2.0. But these days, IBM is in the process of evaluating 2.0 and is not ready to commit to delivering support for it, the spokeswoman said. IBM's decision may be moot anyhow. AIX users contacted last week clearly preferred the Macintosh interface to Nextstep. However, most are leaning toward standardizing on Motif.

## Mactower to Eclipse networks

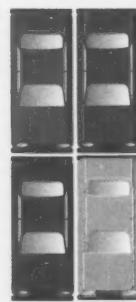
► Apple plans to beef up its high end this fall with a Tower model based on Motorola's speedy 68040 microprocessor, the same chip used in the Next machine and a family of HP workstations. Slated to be named the Macintosh Eclipse, it will be sold as a file server designed to serve as the hub for a complex of PCs.

## What's small, colorful and late?

► Observers say IBM is hard at work on a battery-powered, laptop-size computer with a color screen. IBM had wanted to get the machine out in the fourth quarter of 1991, but power management issues have bumped its release date back to first quarter 1992.

## Looking to the stars

► Compaq may strive to become the Warren Beatty of computers, but the new Silicon Graphics machine, code-named Hollywood, appears to have little of Compaq in its genes — despite the company's pur-



## PARK AND PLAY

The Garage is a new hands-on museum in San Jose, Calif., that explores the way science and technology have transformed our lives. Exhibits are highly interactive, with visitors able to custom design a bike, get their portrait done by a robot, cruise over Mars by laser disc and create their own earthquake. The facility's name pays homage to those Silicon Valley start-ups whose million-dollar inventions got their start in garages.

Courtesy of The Computer Museum, Boston

## Whatever works

Executives in leading industrial countries cite the top three factors that make their organizations successful (1 = most important)

1. Customer service
2. Product quality
3. Technology

1. Product development
2. Management
3. Product quality

1. Work-force skills
2. Problem solving
3. Management

Based on 11,678 responses from senior managers in large companies worldwide

## INSIDE LINES

## Money to play with

► Look for further banking consolidations, this time at the automated teller machines. Visa U.S.A., which currently has one-third control of Plus Systems, is negotiating an outright purchase of Plus. An official at Plus said such a merger could occur within the next two months. Visa recently announced it intends to launch a debit card this year. It's all part of Visa's intention to become a major player at all levels of the electronic funds transfer market.

## DG readies a four-pack

► This week, DG is expected to roll out four 33-MHz, 88K-based Avion workstations. Code-named Rolling Rock, the project has been on the drawing board for about a year now, sources say, and the new single and dual processors will make the current 16-MHz 4020 and 3200 machines offered by DG obsolete. Priced between \$8,000 and \$10,000, the new entries will compete directly with HP's recently announced entry-level RISC server.

## What's Next, you ask?

► AIX users last week were wondering what ever became of IBM's interest in Next's Nextstep. So were we, so we asked IBM. According to an IBM spokeswoman, IBM did begin a limited delivery of support for

chase of 13% of the smaller company in April. The low-end graphics workstation is set to make Silicon Graphic's entry level more competitive than its current low end at \$11,500.

## Finally, a real home computer application

► Pittsburgh-based Neuralware offers the simulated cookie-baking benchmark with a straight face. Its software — which simulates organic neurons working through a task — improved temperature control by 97.66% and cut error variances by 50.26% in a simulated cookie-baking process. Neuralware said the software took into account "residue buildup" (sloppy bakers) and "the thermodynamic behavior of the cookies" (bubbling, charring). Gee, just like the ones Mom used to simulate.

*What, me worry? Microsoft panned the IBM/Apple alliance, but company evangelist Steve Ballmer hits the East Coast this week on a tour designed to update press and analysts on Microsoft's Windows strategy and, no doubt, non-OS/2 strategy. Meanwhile, a Windows analyst says the company has been calling to ask whether he's hearing enough from Microsoft.*

*"Tell me they aren't feeling the heat," he quipped. Well, it was hot enough for most in recent days and to keep the flames high throughout the summer, call in those news sizzlers to News Editor Pete Bartolik at (800) 343-6474, fax some paper fans to (508) 875-8931, or do it the cool way by dropping a line via our Compuserve address, 76537,2413.*

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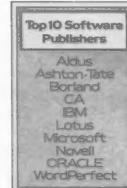
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